United States Court of Appeals

for the Second Circuit

APPENDIX

ORIGINAL

74-1818

United States Court of Appeals

For the Second Circuit.

DAVID LANE and MARY ANN LANE,
Plaintiffs-Appellants,

against

GENERAL MOTORS CORPORATION, A. B. CHANCE CO. and PITMAN MANUFACTURING CO., a division thereof (herein referred to as "Pitman"), and GOODYEAR TIRE & RUBBER COMPANY,

Defendants-Appellees.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK.

APPENDIX.

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THE WITNESS: Correct.

THE COURT: When that locking device takes effect, what position do you call that then?

THE WITNESS: Then it's in a locked condition, and the latch is in theprimary latched position; and in a locked condition, as counsel pointed out, you could not open it from outside because you could push the button and not reach any response.

On the inside you could still draw it from the locked position backward into the position where drawing it further will unlatch it.

THE COURT: What position do you call that? Suppose the passenger pulled the handle back.

THE WITNESS: Then it's in an unlatched position which, if you push on the door or the door has enough sealing around it to have a spring effect, it will pop open partially.

THE COURT: All right, Mr. Reardon.

Q Getting back again to this physical exhibit, you were talking about longitudinal vertical forces, I think was the term you used during your direct examination. Do you remember that, sir?

A Longitudinal vertical and laterla.

Q And lateral. Am I correct, again orienting this

for the jury that in terms of longitudinal forces, thatyou concluded that the longitudinal forces on this device during the course of the happening of this occurrence were minimal? Is that your conclusion?

A. In the context of minimal, not sufficient for the degree of engagement that existed to deflect the approximately one-eleventh inch plate in a manner that would suggest that it attempted to resist such forces.

Q. In other words, in lay language, so that I can understand it, you didn't see any manifestation in this piece that there had been sufficient longitudinal forces to distort what you referred to, and I do, as the shroud or cover; isn't that so?

A. That's correct, sir, yes, during -- you mean during the opening?

Q. During the opening.

A. Yes ,sir.

Q. And again putting these two pieces together for the jury to see it, what that means is thatyou didn't conclude that this shroud or cover demonstrated any bending or distortion of any significant character to suggest that a longitudinal load or force of sufficient strength had been applied to bend or pull that shroud?

A. Initially.

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Q Initially?

A Sequentially it could have, you see, but initially --

Q Initially you found none?

A No, because if there is vertical displacement --

Q And indeed, in looking at the shroud, will you agree with me that it appears to the naked eye, at least, to be intact along that surface?

A In normal alignment, yes, sir.

Q So that in terms of what people can see, as distinguished from conceptualize, you can't see any indication of longitudinal deformation in that shroud or cover, can you?

A You can see no permanent deformation; that's correct, sir. There is two types, of course, elastic deformation and permanent.

Q Do you see any inelastic deformation?

A That would be permanent and elastic deformation is the temporary response of structures within it's elastic limit.

Q Let me ask you this: Youtalk about deformation. To begin with, metal is elastic, correct?

A Yes.

Q But it's not like a rubber band, is it?

A No.

Q It is not totally elastic?

A Correct.

Q So that while it has a property of elasticity, you cannot anticipate that it will bend back into its original position with a force placed on it; isn't that correct?

A I am sorry, did you say cannot or can? I didn't catch that.

Q You cannot.

A Of course you can.

Q you can?

A Certainly.

Q Well, did you ever conclude at any time that in regard to metal, there was such a thing as maximum deformation? Did you ever observe that phenomenon?

A Sure, in the crash studies I have --

Q That means the most that something can be deformed; is that what it means, maximum?

A It's the most that it did deform.

Q Most that it did deform?

A Yes.

Q Fair enough. And you also recognized the concept of elastic deformation, right, so you have maximum deformation and then there is part of the maximum which is

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elastic, right?

A. Yes, sir.

Q. If you subtract the elastic from the maximum, you wind up with what is left, the inelastic deformation?

A. Yes, sir.

Q. That is a known phenomenon, isn't it, in metallurgy in the use of metals?

A. Sure.

Q. Elasticity and the fact that there is a maximum and elastic portion and what is left is inelastic?

A. What we described, yes.

Q. Can you show the jury along the edge of this cover or shroud evidence of inelastic -- evident elastic deformation, elastic, not inelastic?

A. No, by definition you wouldn't see it.

Q. How about inelastic deformity?

A. By my prior statements, there is none.

Q. There is none?

A. Yes, that's -- I mean to the naked eye. That's reasonable to assume, that there is none there.

Q. So that when you said before that metal was elastic, you also intended, did you not, to qualify that by saying that there is some measure of inelasticity in metals?

A. I didn't mean to, but I certainly agree to it.

Q You agree to it, and you observed none or the jury can observe none in this shroud?

A None what?

Q No bending or deformation in this shroud.

A Yes, that's correct.

MR. WALKUP: I didn't want to interrupt the line of questioning, but I understood that you were going to have this exhibit marked that the witness has marked in purple.

MR. REARDON: I will be happy to do it right now, Mr. Walkup.

MR. WALKUP: Thank you.

(General Motors Exhibit A108 marked for identification.)

Q Yesterday, you mentioned something about a cab of this particular vehicle. Do you remember that, sir?

A I don't know what you have reference to.

Q But do you recall testifying about the cab of this vehicle in terms of its durability and stability?

A I think it's a durable cab, but I don't recall saying that it was non-durable, as long as there is no unusual exposure.

Q So you think it's a durable cab?

A Sure, you can leave it parked forever and nothing will happen to it if you protect it.

Q When you say durable, I take it, to the Court

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and jury, you mean more than just parked?

A. Depends on how much more, sir.

Q. Depends on what kind of forces it is subjected to, I take it? That's whatyou mean?

A. Sure.

Q. You were provided with a detailed drawing, were you not, of this particular truck prior to the time you made your examination back in January of 1973?

A. I had some drawings. I don't know that they were particularly detailed.

Q. Do you recall testifying thatyou had a scale drawing of the truck?

A. Yes.

Q. Scale drawing of the truck, what did that mean to you when you said it?

A. External geometry. Doesn't necessarily indicate structure.

JG 1 10:50 Severy-cross

Q Do you remember testifying that you were shown a drawing of the chassis of the truck?

A I think I gave that answer.

Q Can you show us the drawing that you had and have?

A (Handing).

Q Now, this drawing that you have provided to me was part of your file, was it?

A Yes. That was known as Defendants' Exhibit J, for General Motors, on my deposition of 6/30/73.

Q And this is something you had in your possession at the time you made your examination of the latch and the various mechanisms and reached your opinions, is that not so?

A Well, I can't say that it is so as to the chronology of when I examined the latch as contrasted to receipt of that drawing.

Q But, in any event, we know this: that at the time you were examined you had this drawing in your possession.

A At the time of the deposition, yes.

Q In June of 1973.

A Correct, sir.

Q And you made your examination in January of 1973, right?

A Of what?

JG 2 10-1 Severy-cross

Q Of the latch.

A Sure. Yes, sir.

Q Isn't that what you told us?

A Yes. But I didn't know what you were referring to.

Q Okay. All I am trying to establish is that at least as of the time of your deposition you had the drawing and you made your examination six months or so earlier, right?

A Of the latch.

Q Of the latch.

A Yes.

MR. REARDON: I offer it in evidence. No objection by counsel.

(Defendant General Motors Exhibit A109 for identification received in evidence.)

Q Let me show you 109 in evidence and also Plaintiffs' 102 in evidence. You'll agree with me, will you not, Mr. Severy, that there are differences in those two drawings (handing)? Let me make it gross differences, because I don't want to be unfair, to make you have to look at all the dimensions.

A Yes, there are differences.

Q As a matter of fact, isn't there one basic difference that the exhibit which plaintiffs put in yesterday, 102,

JG 3 1052 Severy-cross

shows a drawing of a cab over a tilt cab vehicle? Isn't that so? This exhibit right here (indicating).

A Yes.

Q Whereas the one you had in your file doesn't have a tilt cab vehicle, does it?

A It is a standard kind of cab.

Q Standard cab.

A Yes.

Q Different configuration.

A For the cab, yes.

Q For the cab. And you know, don't you, that the cab here was a tilt cab?

A Sure. It shows in the photos.

Q Now, did you make any observations or conclusions at the time you examined the latch in regard to the configurations of the chasis of this vehicle in relation to the cab?

A No. I examined the latch, as I recall, and the notes that I generated had to do with the latch.

Q In other words, you didn't draw any conclusions, did you, with regard to the cab or the chassis that the cab was mounted on?

A No. That latch in even an automobile would be a poor installation.

Q I'm sorry. I didn't hear that answer.

A I said that latch even in an automobile would be a poor installation in terms of its performance.

Q Well, now, sir, if you just answer my questions, I would appreciate it. Would you listen to the question again? I don't know if it's been answered or not at this point, because I didn't hear the answer first, and the second time I didn't like it.

A The answer is no.

MR. REARDON: Could I hear the question, your Honor?

THE COURT: You mean your own question?

MR. REARDON: Yes, my own question.

(Question read)

MR. REARDON: I move to strike the answer, your Honor.

THE COURT: Strike the answer.

Q Am I correct, sir?

A Well, I don't see why you would be correct if I had photographs of the vehicle in question and I examined the latch.

Q My question is, did you --

THE COURT: Then your answer is he is not correct.

JG 5 1054 Severy-cross

THE WITNESS: Thank you, your Honor.

THE COURT: Put the next question.

Q Did you draw any conclusions or opinions with regard to the cab or chassis at the time you made your examination of the latch in January of 1973?

A I can't state whether I did or not, sir, at this point.

Q All right. That is fair enough.

Do you know what the construction of the cab is on this particular vehicle?

A In general, yes.

Q Did you ever see any drawings of it, for example?

A Detailed drawings? No, sir.

Q Do you know what the configuration of the skeleton of the cab is?

A Metal.

Q In detail.

A Not in detail.

Q Do you know the manner in which it is affixed to the chassis rail, if at all?

A Sure. By the thinge anchor points and by the latch for the tilt cab.

Q All right. Where are they?

A The two hinge points in the front, and they are

JG 6 1055 Severy-cross

at the forward end of the hat section that provides a stiffener, pair of stiffeners running longitudinally. And the other end, the chassis end of the hinge point, is fastened to the frame of the vehicle.

Q And am I not correct, sir, that at least to this extent, back when you made your examination, in January you concluded that in some way the twisting of the chassis put forces on the door? Wasn't that your conclusion?

A I don't remember. I would have to look to see.

Q All right. Let me see if I can --

A You have my notes.

Q Okay. Page 98, line 26. Let me begin at line 10:

"Q Did you in your evaluation of this accident account for the demarcation of the door which appears to be folded back, the sheet metal?

"A Yes. That occurred during the upset onto its side as a result of the door being open.

"Q Is the chassis on this truck sort of square?

"A Well, the frame --

"Q Rectangle, I mean?

"A The frame is made with two longitudinal rails with transverse basing which makes a rectangle. If I had a regular piece of pliable metal and I would twist it, is

JG 7 1056 Severy-cross

that what you mean by the twisting of the chassis as it came up on that median divider?

"A Yes, that's right.

"Q And it is that force which you indicated was transmitted ultimately to the striker plate and latch here.

"A Yes."

Do you recall making those answers to those questions?

A Sure. But does that relate to January?

Q All you have to do is say yes. I'm just laying a foundation for other questions.

Did you, sir?

A I made those statements.

Q And are they accurate?

A It appears you've read them accurately. I don't have it before me.

MR. REARDON: Will counsel stipulate that?

MR. WALKUP: I'll stipulate that.

Q So that it was your view then that the twisting of the chassis is what caused this door latch and striker to separate.

A When? You see, you are relating --

Q I'm not asking you when, sir. I'm not trying to argue with you. We can establish when, and we probably will.

I'm just asking you whether that was your conclusion.

A Fine. That's my conclusion. But you are relating it to January, and that may not be a correct statement, see?

Q I'm not relating it to any time. I'm relating it to your deposition in June 1973. Did you say that then?

A I said that then.

Q Was it true?

A Certainly.

Q Is it true today?

A Certainly.

Q Okay. At that time the only drawing you had of thsi truck in your possession was the drawing that you've shown us, which is not a cabover at all, isn't that so?

A That's so. But I had photographs of cabovers.

MR. REARDON: Your Honor, I move to strike out gratuitous statements by the witness. I'm not trying to be discourteous to him. I would most --

THE COURT: All right. Counsel for the plaintiff make a note and pick it up on redirect, then, if you think it is important.

Q There is no question you saw pictures that it was a cabover, isn't that so?

A As part of my evaluation.

Q They are right in the police report and every other

place, aren't they? You've seen color pictures of the accident site.

A I've seen color pictures, yes.

Q And the vehicle itself.

A Yes.

Q Now, you've indicated that the door latch was inadequate, is that generally correct?

A That's correct.

Q Let me read you this statement:

"The manner in which the door latch was inadequate may best be characterized by the statement that the vertical restraining device which is usually contained in an integrated door locking system was not installed thereat, so that when the truck mounted the center island curb and a torque and twisting force was brought to bear between pillar and post of the door latch and locking system and there was no vertical displacement appurtenance, appliance or piece of equipment thereat within the integrated unit, the door popped open when it should not have done so, permitting plaintiff to be partially ejected."

Now, does that accurately state your position with regard to the inadequacy of this door locking system?

A Partially, yes.

Q And were you consulted in regard to the preparation

JG 10 1059 Severy-cross

of that statement, which is an answer to an interrogatory in this case?

A I don't recall whether I was or not, sir. I've had conversations with the attorney and he may have paraphrased some of my conversations.

Q Now, whe- this statement talks about an integrated door locking system, do you know what that means?

A Sure.

Q What does it mean?

A It means that the various factors necessary to develop an effective latching system are present in the confines of the latch-striker areas and not necessarily remote.

Q Well, now, when you talk about "remote," is that referring to the existence of these various strikers on the top and bottom of the door and corresponding strikers on the top and bottom of the frame of the door?

A Yes. The deflection plates.

Q You had never seen this door at the time you made your examination, did you, except in photographs?

A That's correct.

Q And those photographs that you saw, did they reflect these strikers?

A I think -- I believe -- yes. I think one, I'm not sure whether it is the upper or lower, does show, and

the other does not.

Q Did you record in any fashion at the time you made your examination in January of 1973 the existence of these strikers and what function they played in connection with this door?

A Not in January, no.

Q Did you at any time?

A I recorded the absence of them by studying the door jamb. In other words, the face of the door. You could see the absence of them before the latch was removed, sir.

Q You could see the absence of strikers?

A Yes. You could see the absence of vertical synch plates or devices to hold th- latch and striker in positive engagement.

Q Is it your testimony that these strikers on the top and bottom, both on the door and on the frame of the door, do not serve the purpose of restraining that door in any respect?

A Not in any respect; I wouldn't state that. Certainly they are anti-rattle guards. That is a restraint.

Q Are they also designed to hold that door in position as it relates to the latch and the striker?

A No, sir.

Q In no respect?

A Certainly that isn't the intent insofar as the security of the latch.

Q Did you ever see a door like this before on a truck like this?

A Oh, yes, I've seen lots of doors.

Q Like this?

A Sure. That GMC Times truck that I drove was that type of truck.

Q GMC Times truck?

A Sure.

Q What is that, sir?

A In the deposition you asked about different trucks I drove, and that was one of them. They had this type -- it had that type of door.

Q Speaking of trucks, you mentioned two trucks during the course of your direct examination. Were they trucks right on your premises?

A I have --

Q The two you mentioned.

A I have one on my premises. I am not sure about my reference to the other one.

Q You said a Ford and a Chrysler.

A All right. A Chrysler was on my premises last

year and the Ford is now.

Q What kind of trucks are they?

A Well, the Chrysler was, I think it is, 20,000 pounds GVA stake truck, and the Ford that is presently on my premises is an F 250 Ford truck, '62 gear.

Q Pickup truck?

A Yes, sir, heavy duty pickup.

Q You don't have any trucks of, or haven't had any of, the 30 to 32 GVW that you've had, have you?

A No. I think presently I just finished braking tests on -- it is still in my shop. I can't tell you what the capacity is, but it is in that area, but --

Q In getting ready to come to testify here, did you pull together any data or photographs or anything of that kind with regard to such trucks?

A No; I didn't see any reason to.

Q Well, you knew you were going to be asked about them generally, didn't you?

A I didn't know what I was going to be asked about them.

Q Did you ever, sir, in all the testing that you told us you've done, try to instrument -- do you know what I mean by "instrument"?

A I do.

JG 14 1063 Severy-cross

Q Otherwise I'll try to explain it -- what happens to a truck chassis, what happens to a cab of such a chassis as it mounts a divider or an elevation similar in character to what we've got here?

A Well, I have instrumented, but I don't think it is to the extent you are thinking of. You are probably thinking of displacement recorders, and my instrumentation was motion picture.

Q Let me tell you what I mean by instrumentation. That is some kind of gauge put right on the door, take that truck up over a similar jolt like we had ehre and record what the effect would be through those kind of gauges.

Did you ever do that?

A I don't think I've done that with a truck, sir. I've done it with passenger cars.

Q Did you try a static test at any time since you were retained in this case of the effect of the bending of the frame of the chassis on the doors or cab of a truck like this?

A No. I've done it on passenger vehicles since I was retained.

Q Nothing on a truck?

A No. You see, that takes time and it takes money and there just wasn't funds for that kind of thing.

JG 15 1064 Severy-cross

Q Could you go out and get a truck like this? I mean, you could rent a truck, can't you?

A Sure, sir.

Q Jack it up?

A And then get my staff busy? And before I'm done I could run up a bill that the plaintiff can't afford. So I just couldn't do it.

Q Did you ask? Did you suggest that it be done?

A No. I felt it was unreasonable.

Q Did you suggest that it be done?

A I had the background that I didn't feel I should suggest it. I didn't think it was necessary, sir.

Q So you are really testifying in terms of this kind of a truck in this kind of a situation based on your general experience, right?

A In part.

Q How many trucks did you run through a maneuver similar or comparable to what is involved in this case before you testified here?

A Well, I handled one that was very much similar to this truck over the obstacle course that we had, which are used by police in training. It is a pretty tortuous path and it develops tortional loads and also vertical movements of the vehicle, and that was that 20,000 pound unit.

JG 16 1065 Severy-cross

But I didn't hit any curbs with it. I m anaged to get through.

Q You didn't take it up any curbs or anything of that sort?

A No, sir.

Q Did you slam it laterally into the side of a curb? I take it you didn't.

A No. That wasn't the purpose of that particular test.

Q That would be damaging to the vehicle, wouldn't it?

A Well, it could be. This one had duals on it, so it would be different.

Q The one you did test, do you have the report of that test with you?

A No.

Q Do you have any reports of what you did with you?

A Well, I have my file that you had the opportunity to have copies of.

Q Do you agree with me that there is no report of any testing of other vehicles in that file?

A I believe that's right, sir.

Q Now, when you examined thedoor and that was by photographs that Mr. Walkup was showing you, you did observe

deformation in the sheet metal of the door, correct?

A Yes.

Q Isn't it correct, sir, that that sheet metal deformation you attributed to damage inflicted on the truck when it upset? Isn't that right?

A Yes.

Q In other words, the various twists or twisting that you say provoked the opening of this door that day was not observable by you in any sheet metal damage in the door itself.

A Sure it was.

Q It was. Q It was

A Yes, with respect to the striker and the marks that I indicated, sir.

Q The striker is on the B post.

A Yes.

Q I'll get to that in a minute. Let's talk about the door.

A All right.

Q Am I correct that you could observe no deformation in thedoor which you could attribute to anything other than the bending of the door when the truck full on it in the upset?

A I think that's true.

JG 18 1067 Severy-cross

Q All right. Now, how about the frame of the door? Let's hold teh s triker for a minute. I'll ask you about the striker. Did you observe any deformation in the frame of the cab which you could attribute to this twisting of the chassis that you said preceded the opening of the door?

A No, sir.

Q But you did conclude, as I understand your direct testimony, that there was some indication on the striker plate itself, if I can find it, that there had been contact during the course of the twisting; is that so?

A Yes.

Q And do I understand your testimony to be that some of these markings on this striker plate are what you base that testimony on?

A Yes.

Q And are these markings some of which at least appear to be silver paint scrapings (handing)? Is that what you mean?

A They are disruption of paint, yes.

Q In other words, there is no gouging that a jury or juror can see in that, si there, on that striker?

A Well, I think the evidence is in the form of the disruption of the paint that has been impacted by a rather contoured surface. You don't get gouging without having

JG 19 1068 Severy-cross

some kind of a gouging element.

Q My question really is, I thought it was, is there any gouging or banging or indentation or impression of metal to metal contact that you can see or a juror can see in that exhibit?

A Sure.

Q On the striker, forgetting about the tongue.

A Yes.

Q All right. Would you show us where it is? Maybe you could take your grease pencil and circle it.

A Yes, sir. Suppose I put an arrow to it.

Q All right. Can you circle it?

A I can. But in doing so I cover up other things.

Q All right. Well, don't cover up other things.

A (Marking). I have placed an arrow pointing to the indentation.

Q And what you are saying is that that represents an indentation on the striker which is evidence of the fact that there was twisting of the chassis which preceded the opening of this door, right?

A It is evidence of the disassociation of door to chassis which preceded the opening of the door, yes.

Q Now, these paint scrapings that are on the face of the striker, do you attribute those to the same situation?

A Where are you pointing to, sir?

Q (Indicating).

A Yes.

Q Why don't I borrow your grease pencil and I'll circle what I'm talking about.

A Yes (Handing).

Q Let's take this one first, which is the circle nearest to the top of the striker (marking); is that right?

A Why don't we put a letter on it and then we won't confuse it.

Q A (marking)?

A Fine.

Q That is paint scraping, isn't it (indicating)?

A That is paint impact, yes.

Q Paint has been removed.

A Yes.

Q And that's the only manifestation of this twisting that you were talking about, what I've cir'd in A, isn't that correct?

A No.

Q At that point.

A At that point.

Q At that point. What si circled here in A you say

JG 21 1070 Severy-cross

is a manifestation of this twisting being reflected in the lock and striker, latch and striker.

A I'm not talking about the twisting. I'm talking about the movement between the latch and the striker that preceded the door opening.

Q Caused by the twisting of the chassis.

A That's your words. I'll use mine, which are: caused by the truck in a yaw contacting the curb, developing longitudinal and tortional movement.

Q You say it is my words? I thought I just read to you from your deposition that it is your words.

A I haven't heard it. Please read it again.

Q Okay.

A You read the interrogatories, I believe.

Q Page 98, line 26, and I read this whole sequence. I am just going to read one question now. Do you want the whole thing? I'll read the whole thing:

"And it is that force" -- namely this twisting force -- "which you indicated was transmitted ultimately to the striker plate and latch here."

A I think I had better hear the whole thing.

Q And you answered yes.

A That doesn't mean a thing to me, sir.

Q All right. I'm sorry. I read it before, but

JG 22 1071 Severy-cross

I'll read it again;

"Q Did you in your evaluation of this accident account for the demarcation of the door which appears to be folded back, the sheet metal?

"A Yes. That occurred during the upset onto its side as a result of the door being open.

"Q Is that chassis of this truck sort of square?

"A Well, the frame --

"Q Rectangular, I mean?

"A The frame is made with two longitudinal rails with transverse basing, which makes a rectangle.

"Q If I had a regular piece of pliable metal and I would twist it, is that what you mean by the twisting of the chassis as it came up on the median divider?

"A Yes, that's right.

"Q And it is that force which you indicated was transmitted ultimately to the striker plate and latch here.

"A Yes."

A Yes. But you didn't say that and only that force.

Q You said this was my language and I'm asking you whether or not it is my question, and you answered yes to it at your deposition.

A That's correct. But you are now --

Q Thank you.

JG 23 1072 Severy-cross

A Excuse me, sir? I'm sorry. I didn't hear you.

Q I said thank you.

A Well, that's incomplete.

MR. REARDON: It is not incomplete, your Honor, and I respectfully ask the witness be directed not to be argumentative. I'm not trying --

THE COURT: You are arguing with the witness, too. Put the next question, please. See if we can't move along, please, Mr. Reardon.

Q There are other paint removal indications on this striker, aren't there, sir?

A Yes.

Q Do you attribute all of them to this condition?

A No.

Q Well, now, when you looked at the photographs which Mr. Ehrlich had taken in his examination of the truck, were you able to see any of these markings on the striker (handing)?

A I don't recall, sir.

Q May I look over your shoulder?

A Sure.

(Pause)

A Yes, you could see the one you circled marked A. Do you want me to mark it A?

Q Yes.

JG 24 1073 Severy-cross

A All right.

Q Would you put a big circle around it, please?

A Surely (marking).

Q Bigger than that, if you would.

A Well, I'll put another bigger one, then. But I've got it circled nicely. I'll put a bigger circle around that, kind of like a bull's eye, and then I'll put A on Exhibit 80 G-1, all right?

Q Fine.

A (Marking).

Q Now, you say that's the equivalent of what you've marked A on the physical striker itself?

A Yes, sir.

Q Any other pictures that show it?

A There is an indication in the same area, but this view doesn't seem to bringit out, and I'm looking now at 80 J-1.

Excuse me. May I see this?

(Pause)

Yes, it is there. It is just subtle.

Q Well, why don't you draw an arrow to it and not on top of it, if you would.

A Sure.

Q So the jury can see what you are pointing to.

A I'm drawing a series of arrows pointing into it so that it will localize what I'm pointing to (drawing).

Then, additionally, there is a mark down below here that I think is on the wedge section. It isn't very well defined in the view because it is a very non-direct view. But by studying the striker -- for example, the one with the arrow can be localized. By studying Exhibut 75, then you can localize what it depicts in 80 J-1.

Q All right. Any other photographs?

A No, sir. Of that group you gave me, no.

Q Right. That's all I have.

These are all Dr. Ehrlich's photographs, I take it.

MR. WALKUP: I didn't count them.

MR. REARDON: I got them from you.

MR. WALKUP: Well, I still didn't count them. I believe they are.

MR. REARDON: All right. If you find any others, I will be happy to show them to him.

Your Honor, may I show these to the jury?

THE COURT: They are in evidence.

(Pause)

Q Would you put an A on this one? Because you say that is the same point A, right (handing)?

JG 26 1075 Severy-cross

A Yes, that's correct (drawing). Here you are, sir (handing).

Q And what you are saying is what you see on the striker you can see in these photographs at the same point you've marked them, right?

A Not with a degree of clarity, obviously. But, yes.

(Pause)

Q Just very quickly, sir, you don't know what happened to this striker from the time of the accident until the time you got it, do you?

A I didn't follow it, no.

Q Is it possible that if I took a screw driver and scraped it along this striker that I could take some of that paint off?

A In the manner that is depicted there? Or just take some paint off?

Q Take somepaint off and make a configuration like the various configurations of paint removal we have on this striker as it appears here.

A I think you would have to be trickier than just normal, sir, to be able to duplicate that type --

Q Who would have to be trickier than normal?

A You. In other words, it would take a special

JG 27 1076 Severy-cross

skill to be able to do that.

MR. SCHWAB: I'm sure Mr. Reardon has that skill, your Honor.

Q I know you didn't mean that.

MR. WALKUP: I am beginning to suspect him myself.

A I meant in manipulating tools, is what I'm trying ot say, sir.

Q I see.

A It is a special skill.

Q Special skill in order to make these marks.

A I think that somebody can sit down in a laboratory with one of these little optical glasses and start fooling around and finally reproduce that so that to the naked eye it would look the same. But it would be difficult to avoid embossments that would be different, in other words going through the paint surface into the metal, because when you swat metal you can remove it by impact, and if it is a blunt surface, as the head of that pin, it may do so without an excessive amount of gouging. But when you try to scrape it away, I think that will show.

Q How about if you take a hair pin or nail file and just peck away? You couldn't do it?

A I think somebody could do it.

JG 28 1077 Severy-cross

Q Could do it. All I am suggesting is that there was some period of time after theaccident when we don't really know who was tending the vehicle in terms of watching nicks and cracks and bumps and bends; this was a wreck, you know that.

A Sure.

Q The accident was February 1970.

A Sure.

Q Professor Ehrlick saw it on September 25, 1970.

A Yes.

Q I'm stating these as conceded facts, I'm sure, and counsel didn't get the latchsuntilApril 1971.

A Yes. But, you see, it wouldtake a crook and a super intellect to get them in a manner that would depict the kinds of impact forces that would take place in this kind of upset.

Q Entirely apart from a crook, couldn't somebody quite innocently, in trying to get this off the B post, without thinking about how significant some expert years later might say some mark was, quite innocently do some damage like this to the paint?

A Quite innocently do some damage. But like this, in those recessed areas, I think the probability is so low as to not even be worth considering.

JG 29 1078 Severy-cross

Q Let me back up for one minute. There is no distortion in the door attributable to this twisting; what you saw in the door was caused by the upset, correct?

A The damage to the door, yes. That's the upset damage, because the twisting as we've talked about would reflect elastic changes not likely to lead to permanent deformation. If they existed, the permanent deformations are so catastrophic in nature that you wouldn't be able --

You wouldn't be able to find them anyway, probably not be able to prove anything --

Q In any event, you didn't see anything you could attribute to the twisting forces on the door itself.

A Yes.

Q But you did find these marks on the striker, which is on the B post.

A Yes.

Q Apart from those markings on the striker, you couldn't see any other evidence of deformation in the sheet metal of the frame of that door, isn't that so?

A Well, there is an interesting pattern on the sheet metal of the frame of the door, at the latch retention point.

Q The sheet metal of the door?

A Yes.

Q I thought we had passed the door.

A No. You just came back to it, so I had to comment on it.

Q I said the frame of the door, the metal that surrounds the door, as distinguished from the door itself.

A Well, I am not following you, sir. I'm sorry.

Q Okay. I understood your testimony both today and at your deposition to be that you couldn't see any deformation in thedoor, the sheet metal of the door, which you could say as an expert was attributable to the twisting condition that you say related to the opening of the door. That's correct, isn't it?

A Yes. Except that in looking over the latch retention point, there is some twisting action that would be consistent with that.

Q Are you saying today that you can see something in that door?

A I can see it from here.

Q You can see twisting in that door?

A In the latch retention portion of that door. The door is all twisted out of shape.

Q The latch retention portion. Are you relating it to the face along which the rotor and shroud would protrude?

A Yes. I am not saying that that necessarily is

JG 31 1080 Severy-cross

indicative, for the reason that it also sustained subsequent contact or may have sustained subsequent contact, whereas the striker was in a protected area, not likely to have so sustained contact.

Q Also this area, as you can see, could have been subjected to some jimmying legitimately to get the piece out after the wreck?

A Yes, it may have, sir.

Q I mean, that could have caused it, right?

A It could have.

Q I'm only trying to get your best judgment of what you know now and can tell this jury now. Am I correct that you can't say as an expert that this is attributable to the twisting?

A You are pointing now to the latch area of the sheet metal of the door?

Q Yes.

A That's right; not without absolute certainty, I cannot.

Q Am I also correct that other than the striker on the B post you didn't, in the examination of the photographs, see any deformation in the sheet metal on the frame of the door?

A I don't recall seeing any.

Q So that the manifestation of this twisting and the impact that it had on this locking mechanism turns then on what we see on the face of this striker with the purple pencil markings, is that right?

A No. It turns on the fact the door was open when the vehicle turned over onto it and that the mechanism for opening, as illustrated in the design of that particular latch and striker system --

Q Let me state it this way. In terms of what we can see resulting from this twisting as distinguished from your opinion, in terms of what we and the jury can see, the manifestation of this twisting is reflected in these markings that you have indicated appear on the striker.

A Yes, sir, it is reflected. When you say -- you see, twisting -- it is all right to use that simplistic expression, sir. But there are other displacements going on besides tortional. For example, the rotor bolt or pin printing on the back of the striker at A is not necessarily tortional, though it may have a tortional force accompanying it. It is longitudinal compression that does that. It is print by longitudinal compression.

Then the print below that point which is on the incline plate of the striker, that is vertical distortion of the door relative to its opening.

Q Let me ask my question again, because I very frankly didn't understand your answer entirely.

I want to know whether I and the jury, looking at the various parts that are in evidence here, can see with our own eyes any manifestation of this twisting other than what you have shown on the striker markings with the purple pencil.

A I don't have any in mind other than those marks, sir.

Q Thank you. In the hypothetical Mr. Walkup did indicate that there was snow and ice on the road; right, sir?

A Yes.

Q And you, of course, in your overlay drawing, which is now in evidence as Plaintiffs' Exhibit 64, understood there to be some condition of snow and ice at that time, right?

A Yes.

Q Were you told that it was hazardous --

MR. WALKUP: He was told that in the hypothetical question.

MR. REARDON: Mr. Walkup. maybe I am testing his recollection. Give me a chance. I am not trying to waste time.

JG 34 1083 Severy-cross

Q Were you told that it was hazardous, sir?

A When?

Q Either in the hypothetical or any time before you drew this?

A Well, yes, I understood it to be hazardous.

Q Okay. And did you know that the man, or were you told that the man , who was driving this truck may never have driven this truck before?

A I understood that sort of thing. I don't know whether he may never have, he certainly hadn't been a frequent driver of that particular vehicle, but I understood he had experience.

Q When this truck went into this maneuver and ultimately the turnover, there was a point, wasn't there, when the driver literally lost control of the vehicle?

A Sure.

Q And do you remember in your deposition you indicated that there were two primary things which prevented the driver from regaining control of that vehicle? Do you recall testifying in that manner?

A I believe so.

Q Let me refresh you. One I think you said was the narrow tread axle. Do you recall that?

A Yes.

Q And the other was the boom being placed at the rear of the vehicle.

A Yes.

MR. REARDON: Now, there was a photograph; I think it was received subject to connection. Do you have that, Mr. Walkup, or do we have it?

MR. WALKUP: The man to connect it is outside now. But I don't want to interrupt you.

MR. SCHWAB: I objected to it.

THE COURT: We'll interrupt with the witness. Call the witness who is outside.

MR. REARDON: I'm sure there will be a foundation for this in some form.

THE COURT: Mr. Schwab objects.

(Witness temporarily excused)

MR. WALKUP: Mr. Quixley.

- - -

C H A R L E S A. Q U I X L E Y,

called as a witness by plaintiffs, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WALKUP:

Q Mr. Quixley, by whom are you employed?

A Jersey Central Power & Light Company.

* * *

1094

DAVID LANE and MARY ANN LANE,

v. 71 Civ 986

GENERAL MOTORS CORPORATION, et al.

March 6, 1974
10:00 a.m.

- - -

(Trial resumed, jury present.)

D E R W Y N M. S E V E R Y, resumed the stand and testified further as follows:

CROSS EXAMINATION CONTINUED

BY MR. REARDON:

Q Mr. Severy, yesterday evening, I think the afternoon, as we finished, we were talking about the position of the vehicle when it went into this slide. Do you recall that?

A Yes.

Q I think I was asking you questions whether or not you had concluded that there were two primary reasons at least why the driver of that truck lost control of the truck and couldn't regain control and therefore the resulting path of the vehicle took place. Do you remember that?

A Yes.

Q As I understood your views of the matter, there were two primary reasons for the driver being unable to control the vehicle, one the tread axle or the width of the axle, the tires on it, and the other the mounting of the boom

at the rear. Do I correctly state your conclusions in that respect?

A Yes. Of course, in context with the ice and snow.

Q With the ice and snow.

Now, we had yesterday a copy of the drawing, which showed the dimension of the cab, or let's call it not the cab but the truck that was mounted by Pitman on the back of this chassis. Do you remember that, sir, the drawings, those two drawings?

A You mean the cab portion--

Q And the body portion.

A Yes.

Q In any event, do you remember the other day, in the course of your discussions with Mr. Walkup, you indicated that there was on this exhibit, which is Plaintiff's Exhibit 102 in evidence, a rear view of the body of this truck as it came to be mounted on it? Do you recall that, sir?

(Handing.)

A I don't remember referring to it necessarily, but there is one on the drawing.

Q And that is in the right rear portion.

A Yes.

Q. Do you remember indicating to the Court and jury at that time that the dimension as you viewed it from this, looking at it rearward, was 93 inches as reflected on the drawing?

A That's what the drawing indicates.

Q Yes.

Now, you also said something the other day about 96 inches as being some kind of a dimension that was of significance in this case. Do you recall that?

A Yes. 96 is the overall width that we find most vehicles of this sort on a highway.

Q And aren't there in fact some regulations, either State or Federal, which limit, except where special permission is granted, the overall width to 96 inches?

A For on highway equipment

Q On highway equipment?

A Off highway, of course, is different.

Q And you know that this was to be used both on highway and off highway; by this I mean this rig here.

A Yes.

Q So that we understand everything here and the jury does, the view that is shown on 64F, Plaintiff's 64F in evidence, of this vehicle, which Mr. Quixley yesterday said was taken sometime in March, 1970, that shows the rear view,

or a rear view, of this rig, is that right?

A Yes, it does.

Q And the 93 inch dimension across the back looking at it from the rear of the truck; that would be that dimension that his shown here (indicating), right, sir?

A If the rig was built according to the plans.

Q Right. And we are talking about rig here. For these purposes we are talking about the body. The body, if built according to the plans I have shown you, would have been 93 inches across.

A That's correct.

Q Am I correct, sir, that part of your testimony here in regard to the instability of the vehicle is predicated upon the fact that you found that the first, at least as shown on this picture, 64 in evidence, were mounted inboard of the outer extremity, the outer dimension of the frame?

A Yes. They were mounted substantially inboard.

Q In other words, the tires as shown in this picture, rather than being at the edge of the body of the vehicle, which would be 93 inches, were mounted so that the tread of the tire, both tires, was inboard of that to some extent, is that right?

A Well, I can't say it is right, sir, because you are characterizing information I don't have. However, I can

make a statement that they are mounted inboard. You see, you include the 93 inches as necessarily relating to that photograph, and I didn't measure it and I can only state that this drawing shows 93 and we know that as built drawings are different than the plans to build.

Q You know Professor Ehrlich had an opportunity to examine this truck itself, did he not?

A I don't know that, no.

Q Were you told that he went over and looked at it?

A I understand that he removed the latch from the door. I don't know any other details.

Q I think it has been conceded here that he testified that he did. Do you know of any measurements that have been provided to you by counsel for the plaintiffs in regard to the dimension of this truck in this view shown in Plaintiff's Exhibit 64?

A No, sir.

Q So that I am asking you to do nothing more than to assume that the truck was built as drawn. Okay?

A I can do that, sir.

Q And if built as drawn, it would have been 93 inches along the back?

A That's correct.

Q Now, my question is, is part of your testimony

here in regard to instability based upon the fact that as shown in this picture the tires appear to be mounted inboard, in other words in from the furthest dimension of the truck body as contemplated in the drawing?

A Well, that's part of it. Of course, other photographs show the same thing.

Q Okay. Fine.

I am not suggesting this photograph doesn't show it. I am just trying to get your understanding of that being one of the things you say demonstrates instability.

A That's correct.

Q Now, do you know of your own knowledge how wide the frame rails on this chassis would be as manufactured by the manufacturer?

A I didn't measure them, sir. But normally truck frame rails have this type are around 34 inches.

Q 34. And did you hear at any time that these were reinforced rails on this particular truck as ordered?

A I haven't heard anything.

THE COURT: What are you referring to when you say "rails"?

MR. REARDON: Thank you, your Honor. I appreciate your question.

Q By frame rails, chassis rails, we mean the two

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steel structures which run from the front of the vehicle to the rear of the vehicle, right, sir? That's the chassis rails.

A Yes. Two parallel main frames.

Q And they are shown in this brochure exhibit, which is General Motors' A-92, and I am pointing to them now, is that correct?

A Yes.

Q So that, if I take the rear of these frame rails, the dimension between those rails, again thinking in terms of the rear view, would be 34 inches.

A I don't know that. I am just stating that if it is a standard truck--

Q They are usually built that way.

A Yes. But they do have wider ones.

Q Now, do you know, or have you been told, what the dimension was from the rails to the outer edge of the tires on the rear of this vehicle at the time the vehicle was delivered to Pitman after Hendrickson completed its modifications?

A That would be with the flotation tires?

Q Yes.

Have you seen anything that indicates that?

A No. I just scaled them off from the drawing.

MR. REARDON: I would like to offer General Motors' Exhibit A7, in evidence, which is the Pitman Manufacturing receiving report. It may be in evidence already, but I am going to offer it just in case it isn't.

I would be happy to offer the original, Mr. Schwab.

MR. SCHWAB: I have the original somewhere, Mr. Reardon. I will try to get it.

I have no objection.

(Defendant General Motors' Exhibit A7 for identification was received in evidence.)

MR. REARDON: May I read something from this to the jury, your Honor?

THE COURT: Surely.

MR. REARDON: This is the Pitman Manufacturing receiving report dated March 10,1967, and it says as follows:

"Date chassis received March 10, 1967," and it describes this vehicle. And then down under the caption "Dimensions: Frame to outside tire thirty and three-quarter inches."

Q Mr. Severy, do you see that in this exhibit which I have just read to the jury?

(Handing.)

A Yes. May I look at this for a moment?

Q Yes, sure.

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(Pause.)

A I don't see anything about flotation tires. Is it on here?

Q It doesn't identify the tires, but we have already established when it came from Hendrickson it had the flotation tires on it.

Will counsel concede that?

MR. WALKUP: Yes.

A How about the date on that? The thing I don't understand is the dimension that would correspond to duals and flotations dimensions. I don't know how it would correspond to flotations. So I am wondering about the date.

Q The date is March 10, 1967.

A The date that it was received from Hendrickson?

MR. SCHWAB: I object, as an officer of the Court, to colloquy between counsel and the witness and the witness asking counsel questions.

THE COURT: He asked a question to clarify the question that counsel was putting to him.

Q I am just going to write these dimensions that we have referred to. First you indicated that you are assuming and I know you don't know because you didn't measure, if the truck was as they are usually built, the dimension between the two frame rails would be 34 inches. Is that what you say,

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sir?

A Yes. That's right.

Q And then on this exhibit it indicates that the distance from the frame rails to the outside tire was thirty and three-quarter inches. You read that yourself, sir?

A I read it, yes, sir.

Q Now that would be doubled, would it not, because you'd have it on each side for each tire?

A That's what that implies, yes.

Q So it would be thirty and three-quarter inches again, indicating the both sides. Now if we add those up, you would get ninety-five and a half, am I correct?

A That's right.

Q So rather than move your drawing I am going to write in the upper part, ninety-five and one-half inches total.

Is it fair to say that, assuming, therefore, that the drawing accurately reflects the way the vehicle was built, namely with a ninety-three inch body by Pitman, and if this document I am holding in my hand is accurate, and if your assumption of thirty-four inches for the distance between the frame rails is accurate, is it fair to conclude that at the time the vehicle was delivered to Pitman, that the tires from tire to tire on the rear of the vehicle would have exceeded the dimension of the Pitman body?

A That's correct. That's what that shows.

Q And it would have exceeded it by two and a half inches?

A That's right.

Q The difference between ninety-three and ninety-five

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and a half?

A Really you want to divide that by half, but I concede that the overhang collectively is that, yes.

Q Collectively it is that. It would be half on each side?

A Yes, sir.

Q But in any event, it would not be, as it is reflected in Plaintiff's 64 in evidence; isn't that so?

A Yes, that's so.

Q Which clearly shows those tires inboard of the frame?

A Yes.

MR. WALKUP: May we pass that picture to the jury? I intended to offer it yesterday but you started this morning.

MR. REARDON: I showed it to them twice. I will be happy to.

MR. WALKUP: They haven't seen it up close.

(Photograph was handed to the jury.)

THE COURT: Let me see that, please.

(Photograph handed to the Court.)

Q Mr. Severy, is it fair to conclude that, given the assumptions that I have given you, that sometime after the chassis with the flotation tires was delivered to Pitman by Hendrickson, that there was some modification of the rear

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tires of that vehicle?

A Yes.

Q To put them in the condition they were in in Plaintiff's 64?

A That being the photograph showing them inset?

Q Yes.

A Yes, sir.

Q I take it you don't know, certainly of your own knowledge, what was done by whom in that period between the time of delivery and the time of this accident, right?

A I don't have any information.

Q Have you ever asked counsel about it in the course of your preparation for your testimony here?

A I don't recall asking, no, sir.

Q In any event, these tires, like any other tires, are capable of being taken off when they become flat or worn out or anything like that and replaced, are they not?

A Yes.

Q And do you know whether any of these tires were replaced at any time, of your own knowledge, prior to the accident and after they were initially delivered by Hendrickson?

A Well it appears that the right rear is of a different tread. It is an on-highway--on-highway rather than

off-road tread and that suggests that there had been a change in that regard.

THE COURT: Which tires are you referring to?

THE WITNESS: Yes, your Honor, that was the right rear of the Pitman rig. That tire was different than the other three on that particular vehicle, at the time of the accident.

THE COURT: Different in what respect?

THE WITNESS: Thank you, your Honor.

Concerning the tread design, that reflects that the tread design for the right rear is a highway type tread design where the other three tires are off-road or snow-mud type tire.

Q In other words, it was the right rear that you actually examined in this case after the accident to see if there was anything wrong with it, is that so?

A Yes, that's so.

Q You learned in the course of getting ready to do that, that some short time before the accident, that right rear non-snow-mud tire had been replaced by a conventional tread Goodyear tire?

A Well, I knew it had been replaced. I am not sure if I knew when.

THE COURT: You mentioned Goodyear tire. You are

referring to an on-highway tire?

MR. REARDON: On-highway tire, yes.

THE COURT: As the witness has described it.

Q I want to come back to the rear mounting of the boom but I want to get an exhibit first before I do that, so I will move on to something else.

The upper single tires that you told us about yesterday that were originally put on this truck, were Firestone tires originally, were they not? Did you learn that?

A I don't know that, sir.

Q In any event, sir, in the course of your investigation, somewhere along the line, you did acquire a Goodyear brochure for the supersingle tires that they make; is that right?

A Yes, I believe I have one.

Q Thatis in your file, isn't it, sir?

A I think so.

Q A copy of that?

A Yes.

Q And in the course of examining that, you learned, didn't you, that 18 by 22.5 supersingle tires, which are the dimensions of the tires on this vehicle, are at least according to Goodyear, designed to replace dual 10 by 20's?

A In terms of capacity, load carrying capacity, yes.

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Q Well in terms of load carrying capacity and also in terms of interchangeability.

A Well, that's not so.

Q Well--

A You can't mount a 10x22 on a 10x20 wheel so that doesn't constitute interchangeability.

Q You're telling me the wheels are different?

A Yes, sir.

Q All right, I concede that. Why don't we find the brochure and maybe that will help both of us.

Q All I am asking you sir is whether or not, in terms of replacement of 10x20 duals, Goodyear itself indicates that a supersingle 18x22.5, 16-ply tire, is what they at least deem to be a replacement for the duals.

A Load capacity, yes. That's the spec that constitutes replacement in their connotation of replacement.

Q All right, fair enough; and nothing you have said I take it suggests or should suggest to the jury that supersingle tires are bad or evil per se, isn't that so?

A Well, I have said a few things that doesn't make them sanctimonious.

MR. SCHWAB: Objection, motion to strike.

THE COURT: Well, it will be received as against the defendant General Motors and not against Pitman.

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MR. REARDON: Shall I join in the motion, your Honor? I don't want to get into arguments with the witness today if I can avoid it.

THE COURT: You gave him the opportunity to give the answer.

MR. REARDON: Your Honor, I didn't give him the opportunity to give that answer, but I am not going to argue with him. I am just trying to get some simple, I think--

THE COURT: The witness simply said he didn't agree with you.

MR. REARDON: Yes.

THE COURT: He is entitled to explain why.

MR. REARDON: I have no objection to that, your Honor.

THE COURT: All right. You are suggesting one is as good as the other, and he disputes that apparently. Is that right?

MR. REARDON: I am only asking--

THE COURT: Put your question to him. I don't want to get involved in it either. You ask him the questions. He will give you the answers.

MR. REARDON: I don't know how I got into this. I just asked the question, he made a motion, and now suddenly I am wrong.

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MR. WALKUP: You used the word "evil". That was what started it.

Q You are not suggesting to the jury, are you, that supersingle tires are improperly designed by Goodyear or Firestone or whomever for use on vehicles on the highways of the United States?

A I indicated that they represent compromises over the duals, and I think I spelled it out but I will be happy to repeat it, having to do with bead unseating which renders them more vulnerable to upset, the vehicle that has such a condition, and in terms of the fact that once bead unseating occurs you lose everything, you don't have back-up.

Q That is the parachute effect that you referred to, having the back-up parachute?

A yes, sir.

Q Did you know that Goodyear was a defendant in this case at one time?

A I'm sorry, I don't have legal background and I didn't know that but I will accept it.

Q You know what the word defendant means, don't you, sir?

A Sure, it means the other side of plaintiff.

Q You have been in the courthouse before, haven't

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you?

A Yes, I have.

Q And you know sometimes parties are made defendants, and then when the case comes to trial here they are no longer defendants, you know that?

A Sure.

Q Did you ever communicate to anybody in writing--let's take writing first--that in your view the supersingle tires were designed in a manner that you deemed inappropriate by reason of their bead seating and by reason of the fact that they only provided for one tire rather than dual tires?

A Excuse me--I thought somebody said something--I don't recall any such correspondence, though I may well have done so, or protested it in S.A.E. or government meeting.

Q Do you have any such evidence of your having protested it in any fashion?

A I can't think of any, sir.

THE COURT: Now you used an expression before that counsel used too. Was it bead seating?

THE WITNESS: Yes, your Honor.

THE COURT: What do you mean by that?

THE WITNESS: In a tire, the part that constitutes the strength in terms of volume retention is the bead of a tire, and that has a lot of metal, that is, wrapped

circumferentially to retain the hoop strength of the tires as it is inflated. That bead sits on the rim, flange, and the angle at which it sits in some measure determines the degree or ease with which it may be pushed off that rim, and in being pushed off, it can air out or lose its air and cause a blowout; of if there is a tube it causes a blowout.

If it is tubeless then it causes air-out. And it is a sudden deflation that's possible according to the ramp angle of that bead seat. Steeper angle can be shoved off easier.

The supersingle has three times the ramp angle, three times as steep as the duals.

THE COURT: Put your next question, please.

Q Yesterday, I believe Mr. Walkup used another copy of these specifications that is already a Plaintiff's Exhibit, but we can't seem to locate it so we will use another copy.

Do you remember seeing those specifications, sir?

A Yes, I do, sir.

Q Now I am getting back to your view as to what prevented this driver from regaining control of this vehicle, and you said that there were two factors and I went over one, which was the tires being mounted inboard of the frame of the body; and the other one you indicated was the location of

the boom. Do you remember that, sir?

A Yes, sir, in connection with the slipperiness of the highway.

MR. SCHWAB: I'm sorry, I didn't hear the last part.

THE COURT: In context with the slipperiness of the highway.

Q Yesterday you did mention that as well. Now, I'd like to read from these specifications, just a portion of it.

MR. WALKUP: Can we identify what those are?

MR. REARDON: Yes. I better mark it as a Defendant's Exhibit, because we don't have the Plaintiff's Exhibit, and offer it.

(Defendant General Motors' Exhibit A-11 for identification, marked.)

MR. REARDON: I would like to read just from page 1 of this, your Honor.

This is specifications Pitman Model PC-6 B.D. Polecat, October 26, 1965. This is page 1.

"The Model PC6 B.D. Polecat is a heavy-duty digger derrick designed for heavy-line construction and maintenance operations. The standard basic unit consists of an integral--" and then it lists various things that are

on it, and I am not going to read each of those. The next paragraph says:

"The main frame is a welded structure designed to--"

MR. SCHWAB: Mr. Reardon, you left out one word, steel.

MR. REARDON: I'm sorry.

"The main frame is a welded steel structure designed for direct attachment to the truck chassis immediately behind the cab."

Q Now, Mr. Severy, did you read this specification when you saw it?

A I may have sir, I don't recall.

Q Can you tell me, please, what you understood or now understand the point of attachment to be as described in that Polecat specification for the item I have just read into the record?

A Well, you mentioned cab and you mentioned--

Q You read these words, "The main frame is a welded structure designed for direct attachment to the truck chassis immediately behind the cab."?

A Yes.

Q What does that mean to you, "The main frame is a welded steel structure"?

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A It sounds as though it is talking about either the frame of the Polecat or of the cab, and it is not specific as to which it is talking about.

MR. SCHWAB: May it please the Court, I object, and move to strike out the witness' answer as being unresponsive and by his own definition speculative in nature.

MR. REARDON: I will consent to that, your Honor.

THE COURT: Well, I will grant the motion, but you asked him what he understood it meant. He gave you the answer.

MR. REARDON: I would be happy to have it in. I don't want to offend Mr. Schwab.

MR. SCHWAB: I am not offended. I just feel that the witness' answer was--he was wandering, and sounds like he was guessing a little bit.

MR. REARDON: He doesn't know.

MR. SCHWAB: I don't think that is the degree of certainty--

THE COURT: The jury will make its own observation about it. The question put to him was, what did he understand by it and he answered the question, but since you both consent it be stricken, it is granted and the jury is instructed to disregard it, but I must say the witness

responded to the question.

Now put the next one, please.

MR. REARDON: I will ask it again, your Honor.

MR. WALKUP: I have no objection.

Q What was your understanding of what this meant in terms of where it ought to be affixed?

A Well, sir, I don't think that says what it is talking about. It is not a complete subject. There are two things being affixed to the chassis.

Q Why don't you look at the whole document and see what it relates to and tell us what you understand it to relate to.

A The things you didn't read suggest that it relates to the Polecat work portion and not the cab. The cab isn't mentioned in that line of categorization.

. G.M.
3 a.m.

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Q By cab do you mean a man cab?

A The cab behind the man cab, the front cab, yes.

Q In other words, the cab that was put on by Pitman as distinguished from one that came with the chassis?

A Yes, sir, that's correct.

Q Now are you able to tell us what your understanding of the sentence that I read aloud to the jury was?

A It is still non-specific, but the suggestion, because of what it precedes, that it would be referring to the rig itself, meaning the boom and various accessories, as contrasted to the storage racks and second cab.

Q Being welded, is that right?

A Yes. It indicates that it is welded to the--

Q Immediately behind the cab.

(Pause.)

A That's what it states, that it is designed for direct attachment to the truck immediately behind the cab.

Q Was this welded immediately behind the cab, this Polecat?

A Well, the rig appears to be behind the storage van and second cab.

Q And was it welded immediately behind the man cab?

A The second cab, you mean, you are talking about?

Q Yes.

A It is at the rear of the entire structure, yes.

Q In other words, it is at the rear of the chassis.

A Yes, sir.

Q And wasn't it your testimony yesterday that it was mounted at the rear of the chassis and was not weld, meaning sunken down? Isn't that what you said?

A Yes.

Q And I'm merely asking you whether that is one of the things that you suggest gave it some kind of instability?

A Yes, that's correct.

THE COURT: You mean by this the position in which it was placed?

THE WITNESS: In part, your Honor, the position, meaning located to the rear position of the rear axle, and additionally, not having been lowered to a weld or, in other words, sub-structure, provided to bring the main mass down lower, as I often observe them to be.

Q Do you recall yesterday testifying that in your opinion what caused this latch mechanism to separate, the door to open, was a rather nominal impact? Do you remember that?

A Yes.

Q Now, I'm correct, am I not, sir, that in your

opinion any latch, regardless of its design, given the appropriate forces acting upon it, can fail?

A Sure. It may pull itself free of the structure. But something is going to fail.

Q In other words, nobody has designed a fail-safe door latch that you know of?

A Well, the latch may be fail-safe. But when they are designed strong enough, what happens is that they pull free of the structure. Something has to give. If a railroad train hits a car or a truck, usually something gives. It is not the train generally because they weight 250,000 pounds just for the engine.

Q So what you're saying is, if the forces are strong enough, you can have a give in any latch.

A Separation of some sort.

Q You know in this case, I know, that the gross vehicle weight of this truck was 32,000 pounds. You know that, sir.

A I don't know it, but I assumed that it was at least 25,000.

Q And we know also that in the travels that it made as depicted on your overlay, which is on the blackboard, that truck, weighing 32,000 pounds, was out of control. You know that.

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A As depicted-- excuse me.

MR. SCHWAB: Your HOnor, just for a point of accuracy, I don't think it has been established that the truck actually weighed 32,000 pounds.

MR. REARDON: The gross vehicle weight capacity.

MR. SCHWAB: Right.

Q You understand that as stated.

A As stated I didn't understand that. I assumed around 25,000 pounds. GVW is the springs, the suspension, as to what might be piled on it.

Q The whole load.

A No. It is the capacity of the chassis onto which that kind of load may be mounted, if done so judicially.

Q In any event, the 30 to 32 thousand GVW had been related to you, had it not?

A No, sir.

Q It had not?

A Not to my knowledge. I have no recollection of hearing that.

Q Your assumption was that it was 25,000 pounds?

A As the actual on-road weight of the vehicle.

Q As distinguished from its GVW.

A Yes, sir.

Q Okay. So you got a 25,000 pound vehicle in an

out of control mode on this highway on this day; right, sir?

A As depicted in my drawing?

Q Yes.

A Correct, sir.

Q And as assumed by you as the facts in this case.

A Correct, sir.

Q And we have got ice and snow on the road, correct?

A Yes.

Q And we have got the tire configuration that you've talked about this morning with the jury, right?

A Yes, sir.

Q Plus the boom aft mounted.

A Yes.

Q And did you calculate at any time in connection with this case the speed at which that vehicle, in your view, based on your investigation, was proceeding at during the course of the time from when it started into its out of control condition until it came to rest?

A Yes. I did that for you at the time of the deposition. I think it was 18 to 26 miles an hour, but I can check.

Q I think it was 18 to 28, but I could be wrong.

A No, you're probably right. I'm recalling, and I can tell you in just a moment, sir.

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18 to 26 is correct, sir. I kept the original calculation.

Q Let me refresh you with this question at your deposition, page 64, line 20:

"Q Does that speed"--and that was the 18 to 26 speed you just mentioned--"represent the speed at which it was going at the time it started into the skid or loss of control condition?

"A Yes. The 18 might have been 22 before or the 26 might have been 28 as it proceeded into the skid."

Do you remember making those answers?

A Sure.

Q So it could have gotten up as high as 28 in the skid.

A No, that's not interpreting what I said.

Q All right. You tell us what you meant by that.

A Just the opposite. It might have been going 18 before the skid and, as it entered, lost some speed. That isn't evident by tire marks and so forth, but the evidence would support 18 to 26 miles an hour.

Q Okay. Were you told, sir, that there had been testimony in this case that as the vehicle proceeded into the skid it appeared to pick up speed? Were you told that?

A Yes. I understand that's the impression people

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have that were riding in it.

Q Okay. So let's take 26 as being the maximum speed as you compute it.

A All right.

Q Okay? Is that fair?

A Yes.

Q Now, with this 25,000 pound vehicle proceeding in this out of control condition, I take it that it would be generating a certain amount of energy and forces of its own.

A I'll agree with the forces. I don't understand generating energy, unless you're talking about before it goes into the skid. It is dissipating energy in the skid.

Q Well, is there a concept known as kinetic energy?

A Yes.

Q And what is that, sir?

A That is the stored energy, very much like, if you see a water tower up above a building, the water in there is-- I'm sorry. Did you say kinetic or potential?

Q I said kinetic.

A I beg your pardon. That has to do with energy of motion, which, if you see a vehicle going down the highway, its weight and its speed represents kinetic energy.

Q So this vehicle, proceeding in the mode of the skid, would have had a kinetic energy.

A Yes, sir.

Q And am I correct that the kinetic energy is basically arrived at by taking the weight of the object together with its velocity?

A Well, no, you haven't stated it correctly. That sounds more like momentum. And then it has to be qualified with respect to weight.

It is one-half times the mass times the velocity squared, is kinetic energy.

Q In any event, the two elements that go into the kinetic energy are the weight--is that right?

A Yes.

Q --and the velocity?

A Yes.

Q So is it fair to say that at the time this vehicle was in this mode it was developing or had developed a kinetic energy?

A It had kinetic energy, yes, sir.

Q Now, am I correct that if you increase either the weight or the speeed you will thereby increase this kinetic energy?

A That's right.

Q Now, there is also taking place in this vehicle, because of this mode of travel, what is known as a rotational force, isn't that so?

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A As depicted in my drawing, yes, sir.

Q And as occurred; I mean as you assumed the accident occurred for purspose of your testimony.

A Yes, sir.

Q There was, because of the counterclockwise turning, a rotational force generated.

A Yes, sir.

Q And did you say that there was a trailer attached?

A Yes, sir.

Q And that, of course, would have the effect, wouldn't it, of increasing this rotational force?

A It would as attached and with the understanding, that it did not have brakes hooked up or brakes at least applied. If there were no brakes, then it can add a small augmentation. It is an unloaded trailer.

Q An unloaded trailer, described as weighing maybe three to five hundred pounds.

MR. SCHWAB: I object to Mr. Reardon's statement there. I think the evidence establishes a ton to a ton and a quarter.

MR. REARDON: I will withdraw the question. It wasn't answered, your Honor. I stand corrected.

Q In any event, it did provide this rotational, or an element to this rotational, force which the movement of

the truck itself initiated, is that right, sir?

A I think that's reasonable, yes, sir.

Q And just so that we can all understand it, I don't know if you ever were ice skating or roller skating as a young man or whether you got your finger caught in a latch or not, but the last fellow on the whip, he would really whip around really fast, wouldn't he?

A That's correct.

Q And that is pretty much the concept that would relate to this mode and in particular to the trailer, isn't that so?

A At the latter part of that particular out of contro-, yes, sir.

Q And it is in a lateral movement toward the divider.

A This is after control is lost.

Q So that in addition to the weight of the truck and whatever that might be and its velocity, we also have the trailer giving this added impetus to the rotational force of the vehicle; is that a fair observation?

A To the extent that the truck is in a yaw, then it has that small yaw angle to work the inertial quality of the trailer against, and that is a factor of deceleration.

Q Now, the vehicle ultimately came to rest on its

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side; correct?

A Yes.

Q So is it correct then that at some point between the start of the loss of control and the point at which it came to rest this energy which it had generated by speed and weight, mass, had to be dissipated?

A Yes.

Q One of the things you looked at in arriving at your overlay was the police report, isn't that so?

A Yes.

Q As a matter of fact, isn't that pretty much what you derived your information from?

A Primarily from the photographs, because they can be interpreted. The police report I don't have any way of checking.

Q Was it your understanding that when the vehicle ultimately came to rest that it was partially on the median divider?

A I looked at the photographs and then portrayed it in my diagram the way I saw it in the photographs, and I'll answer that in a moment, sir.

(Pause.)

Q To save time, why don't I show you these photographs, A78A? They are part of the thirteen photographs in

78 (handing).

A It would appear that the back end of the truck may be on the median lane.

Q As a matter of fact, in this particular photograph, which shows a view of the truck, it's got a number 9 on the back, the truck is being lifted and you can see that the rear portion of it is on the median lane, can't you?

A Yes. And it also shows in 5 that the portion behind the duals may extend over the median lane.

Q You say duals.

A Rear duals. I'm sorry, they are not duals. Rear flotations.

Q So that am I correct that somewhere between the beginning of the loss of control and the point at which it came to rest, and we now see part of that vehicle is still on the median divider, whatever, this kinetic energy had to be dissipated to bring that vehicle to rest at that point?

A It had to be dissipated in that path. Is that your question?

Q Yes.

A Yes, sir.

Q And we know, do we not, that during the course of this path the vehicle mounted the curb first from the front, correct?

A Yes.

Q And then continued in a clockwise direction until the right rear tire struck the curbing?

A Do you mean counterclockwise, sir?

Q Counterclockwise.

A Yes.

Q And did you ever visit the scene?

A No, sir.

Q So you don't know of your own knowledge what the height of that curb is, do you?

A No, sir.

Q If I were to suggest to you that it was somewhere between 8 and 10 inches, would you agree with that?

A It seems reasonable, sir.

Q And isn't that pretty much what you concluded from looking at these photographs yourself?

A Yes.

Q When you initially got into the case?

A Yes.

Q Now, you had an opportunity to look at the rim and saw damage to the rim of the right rear tire, didn't you?

A Yes.

Q And, certainly, you saw gouging to the rim?

A Yes.

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Q And I think you told us on direct that the bead of the tire had actually been unseated as a result of the impact of the right rear tire against that curb, is that right?

A And the follow-through action, yes.

Q And the follow-through, the tire going up on the median.

A Yes.

Q Now, in addition to this kinetic energy that we have talked about which had to be dissipated, there is also something known as inertia, is there not, in the course of the travel of this vehicle?

A Yes.

Q And would you tell the jury what that is, please?

A Well, this relates to one of Newton's laws of motion, that a body set in motion continues in motion unless acted upon by some external force. So, if I were to take this and move it along, it continues and has a little inertia before the external forces, which might be windage and also the friction of the interacting surfaces, decelerates it (indicating).

Q So it is sort of the natural propensity of something when you get it moving to keep moving until something slows it down or stops it.

A Yes.

Q Now, in addition to slowing down this vehicle and the inertia that it generated in the course of this out of control mode, you would have had the road surface, true? That would have been creating a frictional force?

A Well, sir, I know you didn't intend it, but you said inertia that it generated. The inertia is inate in the property.

Q Okay. And it is being dissipated by the road.

A Yes, sir.

Q So the inertia that the vehicle had.

A Yes, sir.

Q One of the things that would have counteracted the natural propensity to keep moving would have been the friction of the road.

A Yes, sir.

Q The road covered with snow and ice, correct?

A Yes.

Q And the other thing that would have slowed it would be the natural weight of the mass. In other words, the truck has a certain amount of weight pressing on the road, creating this friction, and combined slows the object down.

A That's really the same thing as you have just

stated.

Q The same thing stating--

A If it were weightless, there would be no slowing. There would be just windage.

Q And we know that this particular vehicle met some specific obstructions, let me call them, in the path before it ultimately came to rest, don't we?

A Yes.

Q And those were the curb, when it first mounted with the front of the truck and then the curb again when it mounted in the right rear, right?

A Yes.

Q So we had this vehicle with this inertia, with the friction created by the ice and snow. Will you concede that that is the last thing you would have on a road surgace, clear road surface?

A I'm sorry. I don't understand your question.

Q Will you concede that a raod that is icy and snowy and slippery and hazardous would create less friction and thereby less slowing down of the object than you would if you had a regular road that the tires could grab onto?

A Yes. The dry road, for example.

Q Right. You agree with that.

A That's correct.

Q So we had the dissipation of the inertia as a result of going over the ice and snow and then the mounting of the curb on the front and then the mounting of the curb on the rear.

A That's correct.

Q And we know, don't we, from the photographs that the total distance that the truck traveled laterally, across the divider, was the width of the divider and the dimension of the skid mark across the divider on a diagonal? Do you follow me, sir?

A Yes, I understand you.

Q Now, the width of the median was what?

A I think I used around 10 to 12 feet, somewhere in that range.

Q So that we had, just so it is clear, this truck with it kinetic energy and the inertia and the forces generated by the energy and the inertia coming in contact with this curb, mounting the curb, front and then rear, and then tipping over, is that correct?

A Yes.

Q And it was in the course of these maneuvers that you say the vehicle door opened.

A These later maneuvers, yes, the mounting of the curb.

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curb.

Q Now, there was a certain amount of jolt, I take it. When you take a truck weighing 25,000 pounds and mount it up an 8 or 10 inch curb, there would be a certain amount of jolt involved, wouldn't there?

A I would expect so, yes.

Q And that jolt would be reflected not only on the chassis cab but the occupants of the cab; is that a fair observation?

A To a lesser extent with them than on the chassis, for example, because everying tends to be sprung in the direction of minimizing the movement to the individuals.

Q As you go higher up, it is less, in other words.

A Our human body has pretty good suspension for energy absorption of that sort of thing. You can tell by cab rides around New York.

Q Now, the last question or two that I would like to ask you in this area is that this inertia and the stopping of the vehicle to its point of ultimate rest was caused by the friction of the road, whatever that might have been, and the mounting of the curb at the front and then at the rear, is that right?

A That's primarily right, yes.

Q Then there was some dragging. I forgot this.

There was some gouging of the grass across the median, correct?

A Yes.

Q And that too would have been a factor--

A Yes.

Q --in slowing the vehicle down, right?

A Yes.

Q Now, in the course of this maneuver, would you not have lateral forces being generated on the latch and striker?

A Yes.

Q And would you not have movement of the occupants of the vehicle in a lateral direction during the course of this counterclockwise maneuver? Would you not have motion of the occupants?

A No, you would not until you get to the curb area. Then you would, sir, because of the low drag coefficient that prevails for that type of surface.

Q And when you say the curb area, are you referring to the front vehicle mount or the rear mount?

A I think primarily the rear.

Q The rear. In other words, as that vehicle swung around and smacked against that curb at its right rear, you would then get lateral forces, correct?

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A Yes.

Q On that latch and striker, and you would get movement of the occupants in a lateral way, is that correct?

A You start to, yes.

Q And you would get them moving to the right, is that correct?

A That's correct.

Q In the direction of the right front door.

A That's correct.

Q You would expect that naturally, wouldn't you?

A By the time it starts tipping over, yes, sir. When I say "starts," I mean it is well into it, because, you see, as it approaches a curb it is heeling in but not so much because it is a slippery surface. As it hits the curb and starts mounting it, then it is into a tipped mode that it becomes accentuated by the curb action.

Q And then you get these forces.

A Yes.

Q Noticeably.

A Yes. I think they are noticeable, yes.

Q And in this period from the time it first mounts, let's say, until it comes to rest you would have some twisting of that chassis, wouldn't you?

A I would expect so. Yes, I would expect so.

jgv 1137 Severy-cross

Q Now, did you measure any of those forces that would be brought to bear upon the interior of that vehicle prior to its coming to ultimate rest?

A Well, of course I'm not sure what you mean by your question. I wasn't there.

Q Did you try on a theoretical basis to come up with some figures demonstrating the amount of the forces that were put on that door as a result of what happened to it from the time it went out of control until it came to rest?

A Well, yes, I can give you some ideas.

Q Did you do any calculations, sir, is my question?

A No, I didn't do any. Of course, I can certainly do some now, if you want. There were nominal forces, meaning subtle compared with what the average door sustains in a crash.

Q. You say nominal forces?

A. Yes, sir.

Q. Did you ever endeavor to compute them?

A. I can do it.

Q. In writing?

A. No, sir, but intuitively I know this. I have done it all my life.

Q. Sir, were you asked to do it by anybody?

A. No.

Q. You know the man didn't have a seat belt on, don't you?

A. The man is probably the right front?

Q. Yes.

Q. Yes, sir.

Q. You knew that. Did anybody ask you, "Since Mr. Lane didn't have a right seat belt on, we ought to try and find out, and will you compute for us, Mr. Severy, what forces his body would have, unbelted, upon that right front door in the course of this mode of the accident"?

A. Nobody asked me but if you ask me, I will do it.

Q. You mentioned a number of things during the course of your direct examination about the S.A.E. Am I correct?

A. I did.

Q. Are you aware of any published standards relating to

truck door latches, truck door latch systems, in existence in 1966 published by the S.A. E.? I'd like a yes or no answer to that question, if your Honor please.

A. S.A.E. didn';tpublish -- I am sorry -- yes and no. I can give you whichever version you want.

Q. Do you have a copy of a truck standard that was published in 1966 by S.A.E. for door latches? Do you have it in your possession?

A. No, it's the terminology we are having trouble with.

Q. I have no trouble with terminology. Do you have a truck door latch S.A.E. standard in effect in 1966 in your possession?

A. I have no such -- as you have referred to it, no sir.

Q. There was some reference to a passenger car door latch, and you showed the jury an exhibit which Mr. Ehrlich had prepared. Do you recall that?

A. Yes, sir.

Q That is a passenger door latch system, is it not?

A. It is.

Q. Do you know what vehicle that came from?

A. No, but you could find them on, for example --

Q. Sir, I am just ask you whether you know.

A. It's a General Motors product.

Q Do you know what vehicle it came from, what kind?

A. No, I don't believe I do, sir.

Q Isn't it so, sir, that styling changes in passenger cars played a role in latch design changes in passenger cars? Is that rue?

A. I can't think of an example how that would be true. SAfety usually plays a role in latch design, and styling in the gingerbread that's tacked on.

Q Let me see if I can refresh you a little bit. Did you ever testify in a case involving a Volkswagen latching mechanism?

A. Yes.

Q In that case, is it not true that the Volkswagen locking mechanism did not have any longitudinal restraint?

A. I'd have to know what case you are talking about.

Q You testified in a number of cases of this kind?

A. Sure, and a number fo VW, Chrysler, Ford.

Q Do you remember --

A. -- G.M.

Q For whom?

A. G.M., General Motors.

Q When did you testify for G.M.?

A. Bedorick. That's of record. B-e-d-o-r -- I think it's i-c-k.

Q Anything to do with door latches? That was a gas

tank case, wasn't it?

A. That was the primary issue, yes, and whether or not they can get out of the burning vehicle might be some other factor.

Q. Are you telling me you testified in that case about a door latch on that car?

A. I don't recall now. That's many e' ars ago.

Q. Not that many years ago. We are talking about 1968 or '69. I know the Badorek case. I am asking you now to tell this jury whether or not in that case you testified about a door latch.

A. I don't recall, sir.

Q. Let me give you the specific Volkswagen case I am talking about. It's called ARnold Segal against Scheuer, and it took place in the Court of Common Pleas of Delaware County, Pennsylvania.

A. Yes, that's a Marvin Barrish matter.

Q. That was in June of 1973 thatyou testified; isn't that correct?

A. That's correct, sir.

Q. On this question of door latches, and the question which I put to you before about styling changes having no role, let me see if I can refresh you.

This is a question to you:

"Q. Were you familiar with the reason for the inclusion of that mechanical longitudinal restraint in U.S. cars?"

Now, the longitudinal restraint is one you were applying in that exhibit shown to the jury which Mr. Ehrlich prepared; is that right

A. Yes, it has one.

Q That is that mushroom you are talking about, right?

A. That's correct, sir.

Q Do you remember making this answer:

"A. Yes, actually it was somewhat coincident with the introduction of styling changes which have more recently been known as the hardtop vehicle, and the problems that were introduced with that styling change was loss of continuity of the door jamb. Instead of having a solid B post, that's the second post from the windshield, and the post hinged to the front doors we usually refer to as the A post, adn then the center post where the rear doors are hinged and the front door striker plate is mounted is called the B post. With the hardtop, for, I'd say, styling reasons, the continuity of the B post was interrupted, and it became, rather than a contiguous member connecting the top to the body sill, became a cantilever device which was only a half B post with the portion above the doors, window sill line, as not having any B. post."

4mb6

Do you remember that?

A. That's a structural degradation, yes, sir, and I agree with it and I have --

Q. Did you make that statement?

A. You bet, and I can substantiate it.

Q. I am not suggesting you can't, sir.

A. Right.

Q. I am suggesting you can.

A. I beg your pardon? You are suggesting what, sir?

Q. You can substantiate it.

A. Right.

Q. I'd like the jury to understand what you mean by a -- how did you describe this kind of vehicle?

A. Hardtop, sir.

Q. A hardtop vehicle -- you tell me if I am wrong -- is a vehicle, passenger vehicle, assuming a four-door vehicle -- (Mr. Reardon drew a diagram on the blackboard) -- does that show a four-door vehicle?

A. Yes, sir.

Q. A hardtop vehicle would be one, according to your testimony, that would not have a continuous B post, right?

A. That's part of it, yes.

Q. In other words, this is the B post; is that right?

A. That's correct.

Q And this you described in that testimony as your A post, correct?

A. Correct.

Q. And the burden of that answer was that because of this styling change, there had been elimination of a continuous B post in the hardtop convertible or the -- they don't call it a hardtop convertible, do they?

A. It's a hardtop, yes, sir.

Q. Isn't that the burden of your answer?

A. That's part of it, yes. Besides the door is also larger, therefore it's an additional burden on the latch.

Q In the hardtop?

A. Yes.

Q. So you agree then that styling did play some kind of a role in connection with the latching mechanism?

A. Oh, I think in that context, yes. I call it structural degradation, actually. Styling is probably the motivation. The engineering point of view is that the structure was violated and consequently, in tests that I conducted, when that occurs it's necessary to develop greater longitudinal constraint on the part of the latch in order to obviate the degradation that took place.

THE COURT: All right, you don't seem to be coming to the end of the cross examination. I thought you were going to take an hour.

4mb8

MR. REARDON: Two minutes.

THE COURT: All right, if you finish in two minutes I will allow you to conclude.

Q Just very simply, you testified for Volkswagen in that case I read you about?

A. That's right, sir.

Q Volkswagen did have the B post, right?

A. Yes, sir.

Q And you said that Volkswagen didn't need this longitudinal restraint of the kind described in that physical exhibit we have in court, right?

A. Because of its size.

Q And because it had a B post?

A. And the manner of construction.

Q Because it had a B post was one of the reasons?

A. One of the reasons.

Q There is a B post in this truck; isn't there?

A. Yes, there is a B post.

MR. REARDON: No further questions.

THE WITNESS: It's a different size.

THE COURT: WE will take our mid-morning recess, members of the jury.

(Recess.)

* * *

a better door and door latch than General Motors, sir, is that correct?

A I'm saying that they--the performance of the door that you had was better than General Motors'.

Q That meant it was a better door and door latch, in simple English words, isn't that correct, sir?

A You have taken part of it away, the jam.

Q Better door, door latch and jam, right?

A Performance-wise.

Q All right.

A For this accident, yes, sir.

Q Then you were discussing something else, Mr. Severy, I wanted to clarify. You spoke, I think, partly based upon a hypothetical and partly based upon your reconstruction, that Mr. Lane sustained his serious injuries, as I will call them, which is what is claimed in this case, of course, he sustained these injuries as we know them to be, as the result of his feet being outside of the vehicle due to the door opening and therefore being in a jackknife position; is that correct?

A Therefore coming into a jackknife position, yes sir.

Q Well, coming into a jackknife postion, is that correct?

A Yes, sir.

Q And the jackknife position as a consequence, as I understand it, of the feet or legs, if you will, being outside of the vehicle as a consequence of the door opening, is that correct?

A Yes, and the head of his torso.

Q And the head of his torso also?

A Yes, out first, in other words, meaning feet out first.

Q And as I understand it then, to accomplish this position and this result and to get these injuries, it was necessary actually for the door to open and for the man to be partially ejected, is that right?

A Yes, sir.

Q And the men who remained inside the vehicle, the other five men who did not go out of the vehicle, so to speak, the other five men to remain inside, it is your understanding did not sustain serious injuries; correct?

A That's my understanding.

Q Bruises and contusions, things of that nature?

A That is my understanding.

Q Some of them didn't receive anything at all according to the record. Would it be a fair conclusion then that if the door had remained closed for Mr. Lane, remained

closed, then he wouldn't have sustained these very serious injuries?

A I believe so.

Q You spoke in response to some questions by Mr. Reardon about kinetic energy, sir; and do I understand it, once again trying to use simplified terms, kinetic energy represents the forces of, let's say, a vehicle in motion, and what is required to stop the vehicle; is that correct?

A Well, it represents the forces in motion and then of course, the opposing forces are what's required to stop it.

Q The forces in motion, all right.

Assuming that the vehicle as shown in one of the exhibits in evidence, Jensen Travel Receiving Report, CR 179, it is shown that the vehicle weighed 25,800 pounds, and assuming that the weight of the occupants--well assuming that the weight of the occupants and any additional equip= ment in there, let's say, brought it up to 28,000 pounds, as just a round figure,--

THE COURT: I don't understand. You started without 28,000.

MR. SCHWAB: No, I started without 25,800.

THE COURT: I'm sorry.

MR. SCHWAB: At least I meant to say that.

Q That is shown to be the net weight on the

receiving document, let's say we have got the weight of the vehicle at 28,000 pounds. Going at 25 miles an hour, will you tell me what the kinetic energy is that is built up on the weight of 28,000 pounds at 25 miles an hour.

A It will take a little longer. My computer blew a fuse apparently. I have to go back to the old ouija board.

THE COURT: Do you use both of them?

THE WITNESS: I use this, and I haven't used this for over a year, your Honor, but as sophisticated as this is, it doesn't go on.

Q Can I give you my slide rule?

A Thanks, I used to use that when I was flying but--

I get 580,000 foot pounds. If I had a computer I would run it out again and recheck.

Q To your knowledge it is 580,000 foot pounds?

A yes, without checking.

Q A 28,000-pound vehicle going 25 miles an hour, right?

A That's what--

Q Now, I am going to ask you to do one last computation for me, sir, and I assure you it will be the last one so that the Court will not be concerned with counsel's wasting time.

Assuming a person has got a 4,000 pound automobile

loaded and is going at 50 miles an hour, I was wondering if you would tell me what the kinetic energy in that is.

A Sure.

Q Generated by the 50 mile an hour, 4,000 pound vehicle.

A Probably be about the same or more because its speed--

Q I would like you to figure that out if you would so we're very positive which it is.

A Okay.

Q Or whether it's less.

A 530,000 foot pounds which would be just slightly less than what the truck had.

Q You come out to one at how much?

A For the car, 530,000 foot pounds.

Q Yes, and how much for the truck?

A 580,000 foot pounds.

Q Thank you.

A It is slightly less for the car.

Q One other thing, Mr. Severy. We were discussing trailers this morning; and I was wondering if you would come down here, and under each of the positions of the truck as you have described it, would you draw a "V" as if it was trailer showing what you would consider the position of the trailer

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speed for it to be a true statement.

Q In other words, speed is a factor in any snow and ice condition, correct?

A Yes.

Q And turning over too.

A As a factor in what?

Q In whether a vehicle will turn over or not, along with other variables.

A Yes.

Q And the height of the vehicle would be a factor, is that correct?

A Height of the center of gravity.

Q Which relates initially to the overall height of the vehicle, correct?

A No, sir. You could have a very high vehicle with very low center of gravity, and conversely.

Q Incidentally, what was the actual height of this vehicle?

A I think it was 11 1/2 feet, if I recall correctly. I have to look it up.

Q The height of this vehicle didn't enter into any of your analysis of the happening of this accident, is that correct?

A I don't believe the height did, no, sir, because

it wasn't a low overhanging structure.

Q What was the length of this vehicle?

A Something like 26 feet, somewhere in that range.

Q Does the length of the vehicle enter into what a vehicle does in a skidding situation, whether it turns over, when it turns over?

A It may. That in relationship with the axle locations.

Q So then the difference of distance between the two axles is a factor in trying to ascertain as best one can how the vehicle will react on the initial skid on snow and ice, how it goes out of control, whether it is going to turn over, and when it will turn over, correct?

A As a factor.

Q Another factor. With regard to initial skidding of a vehicle, whether thedriver applies his brakes or not and the type of brakes relates to the factor of a vehicle going out of control also, is that correct?

A Primarily the use of brakes. The type isn't so important as the type of surface.

Q Well, there are air brakes and hydraulic brakes, correct?

A Yes.

Q You need less force to apply air brakes and

* * *

it a factor?

A Well, I would think that winds when they get up around gusting between 20 and 40 miles an hour, they become traffic hazards for at least some vehicles. And routinely in California they ask the campers to stay off the road when they get into that category.

Q You want campers to stay off the road when they hit 20 miles an hour?

A Gusts.

Q Gusts of 20 miles an hour?

A Yes, meaning sudden blasts.

Q Is that right.

A And you get gusts through passes that can be disruptive.

MR. SCHWAB: I offer into evidence C 120, United States Department of Commerce, for Lakehurst, New Jersey, which has hourly readings of the weather conditions for various days, including February 4, 1970; certified copy.

MR. REARDON: No objection.

MR. WALKUP: No objection.

(Defendant Pitman's Exhibit C 120 for identification, received in evidence.)

(Mr. Schwab read from Defendant Pitmans C 120,

in evidence.)

Q Miles per hour would be a little bit more than that, wouldn't it, if you correlated that, sir?

A Yes, that's about--

Q 25 or 26 miles an hour?

A About 26, sir.

Q Mr. Severy, on the--on the back of photograph 80 E1, if one looks at the mast one sees an inverted V, looks like an inverted V on the mast. Do you see that?

A Yes, I see that.

Q Can you tell me what that inverted V is for on the mast?

A Those are housing structures for the static boom extension. In other words, under a static condition, stationary condition, those booms are extended.

Q Is that what we call outriggers?

A Yes. Those are diagonal outriggers; some of them come out horizontally.

Q So what you're saying is that inside the V there is some sort of hydraulic arm of some sort that goes out; is that correct?

A Yes.

Q And there are other pictures where you can see the actual pad on the side of the vehicle that will

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on this truck also, correct?

A That's right.

Q The actual plowing action of the truck on the median, that itself led to the upset and collision of this vehicle, is that correct?

A It immediately preceded the vehicle going onto its side. But as we both have stated, hitting the curb is part of the upsetting feature, and the loss of air is the other condition.

Q Do you recall making this answer to a question at your deposition, page 100:

"Q Where is the collision?

"A There is an impact with the curbing, there is the plowing action that led to upset, and upset is a collision.

"Q Where is the plowing action?

"A As the vehicle slid along the median.

"Q What do you mean by 'plowing'?

"A It is a side movement of the tires and wheels in the snow.

"Q So, sort of a gouging out, like plowing a hole?

"A Developing sort of a furrow effect, and then the upset does constitute a collision."

You made those answers to those questions back

* * *

A Yes, sir.

MR. WALKUP: Pardon me, may I interrupt? Mr. Schwab is very quiet this morning also, but that doesn't mean you have to be.

THE WITNESS: Right, I'm sorry.

MR. WALKUP: You project your voice so the jury can hear it.

THE WITNESS: Yes, sir.

MR. WALKUP: Thank you.

MR. SCHWAB: I think we have gotten into a pattern which is not my usual style.

MR. WALKUP: It certainly isn't.

MR. SCHWAB: I will revert back to my normal form.

Q Do you recall being asked these questions and making these answers at that examination at page 52, line 21:

"Q Was there a trailer on the vehicle at the time of the accident?

"A Yes.

"Q When you picked up the vehicle that morning, was the trailer on the vehicle?

"A No, it was put on.

"Q Who put it on?

"A I did.

"Q Will you describe the manner which the trailer was put on the vehicle?

"A Just lifted up, and hook it on with a trailer hitch. It is not a ball-type hitch. It is a snap type hitch."

Do you recall being asked those questions and making those answers?

A Yes, I do.

Q Does that serve to refresh your recollection now, these now four years more since the accident, that you were the one who put the trailer onto the truck?

A YEs, sir.

Q Then with regard to the travel of the truck that morning, do you have any recollection as you were proceeding along, let's say, Main Street, of any sense of swaying of the truck that morning?

A I don't recall.

Q And when you were traveling along, I think it's been identified as Adelphia Road or 524 towards Route 9, do you have any recollection of the truck swaying along that road?

A No, sir.

Q And then as you were traveling along Route 9,

* * *

MR. SCHWAB: Certainly.

MR. WALKUP: Starting with line 10.

"Q Locked in some fashio..?

"A Yes. There is a lever. You lift the lever up and you hitch it up. There is a lever on the back of the hitch and you lift it up and there is a lock, and you set the ring into the hitch and it goes down again, and then you have the normal special chains.

"Q How long is the trailer?

"A Ten feet, maybe.

"Q The trailer consists of the body and the boom; is that correct?

"A It consists of the trailer tongue and the rest of the body.

"Q You say the body is ten feet, or is it ten feet all together?

"A Ten feet with the tongue."

That correctly describes the manner in which you hook up and lock the trailer and it description of the trailer?

A Yes, sir.

Q Now, with reference to the weather, you say it was not snowing at the time you went to work, right?

A Yes, sir.

* * *

of the quotation from Hendrickson.

Q You say you prepared a form for the dealer. Let me show you what is in evidence as Plaintiff's Exhibit 93, and ask you if that is the form that you prepared? We have referred to it here as the 839 form.

A Yes, that's the form.

Q What was the purpose of your preparing that paper, sir?

A The purpose was to convey to the dealer the prices of the Hendrickson conversion which we obtained in his behalf.

Q And again, that document refers, does it not, to the Colman front drive axle and the super single tires and the appurtenances that went with that conversion?

A Yes, it does.

Q Are you aware of the way the vehicle apppeared or at least what it consisted of, cab and chassis, when it was sold by General Motors Truck and Coach to Mr. Demidowitz?

A I am aware that it was a cab and chassis we sold to our dealer, DeMidowitz.

Q What kind of tires did that vehicle have as sold by General Motors?

A It had 1000x20 tires.

Q Is that dual rears and two in the front?

A Single front and dual rear, total of six tires.

Q MR. Meyer, is there a custom in the trade of selling heavy duty trucks relative to what is offered by manufacturers of such trucks?

A . Yes, as a general rule trucks are sold, that is .. heavy duty trucks, are sold as a cab and chassis to a dealer, and that dealer or the customer makes arrangements for installation of whatever other equipment is required to complete the vehicle.

Q Taking into account this custom, does the custom provide that the truck, heavy duty truck manufacturer of some awareness of what the requirements of the chassis would be at the time the chassis is ordered?

A Only to the extent that is necessary to get the right components in the truck.

Q What do you mean by the right components?

A There is the proper size axles, primarily.

Q In other words, what kind of a load the vehicle can be anticipated to expect in use?

A Right.

Q That's correct?

A That's correct.

Q In connection with this particular truck, you who obtained the initial quotation from Hendrickson and you

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MR. REARDON: It is immaterial who the one is, the way I view the law, but I have submitted a memorandum to the Court, provided it to you, and I am moving now to arrest any questions on that matter because they would be prejudicial to my client.

MR. WALKUP: I won't go into it, of course, until the Court has had a chance to resume.

THE COURT: I haven't had a chance to look at the briefs yes.

(In open court.)

THE COURT: Please proceed.

MR. REARDON: Mr. Charles Small.

(Pause.)

MR. REARDON: Mr. Small is not here, your Honor.

Mr. Dewane D. Forester.

D E W A N E D. F O R E S T E R, called as a witness by the defendant General Motors, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. REARDON:

Q Mr. Forester, you are employed by General Motors Truck & Coach, are you, sir?

A That's correct.

Q What is your present position?

A Assistant chief engineer-trucks.

Q And -trucks means that General Motors Truck & Coach has facilities for making trucks and other things, is that right?

A There are several product lines. I am charged with the truck activity.

Q And what are your duties presently, sir?

A To manage and direct the design of the General Motors truck product line.

Q How long have you been employed at General Motors?

A Since 1952.

Q And what positions have you held since '52?

A I was first employed at General Motors proving grounds in Milford, Michigan as a test engineer. Then I worked as a test engineer for the General Motors Truck & Coach Division, being a design engineer, designing components, and then again as a manager in the test department at GMC Truck & Coach and then finally in my present position as an assistant chief engineer.

Q And in connection with testing, testing vehicles, would you tell us what years you were involved in that and generally what your function was?

A The testing started in about 1962, I believe, at which time I was assigned the responsibility as an assistant

staff engineer in the test and development section, and the responsibilities at that time were those of directing the activities of the test project engineers in the department.

Q Did the test project engineers test the vehicles that were being developed for production?

A Yes. That is their responsibility, to conduct tests on the GMS product lines.

Q In your present position as assistant chief engineer, would you tell us what you do there, generally?

A Yes, the responsibility of an assistant chief engineer is to direct the design activities of the Engineering Department, and mine is specifically in the area of trucks, to direct the truck design activities of the division.

Q Now, can you tell us quickly what your educational background is, please, sir?

A I graduated from the University of Michigan in 1949 with a Bachelor of Science degree in mechanical engineering, graduated from Michigan State University in 1970 with a Masters degree in business administration.

Q Are you familiar, I know you are, with the General Motors truck involved in this case which has been referred to as the 7500 series truck?

A Yes, I am.

Q And do you from your involvement in this case

and your deposition that was taken that this is a General Motors 7500 series truck that was produced sometime toward the end of '66 or early '67, actually delivered sometime in February, 1967? You are aware of that?

A I am aware of that.

Q Can you tell us, please, when this vehicle, the General Motors 7500 series title cab, was conceived as part of the truck line?

A In 1957-'58. At that time the engineering concept was developed and proceeded to the design stages in '58 and '59.

Q And is that prior to any actual production, I take it.

A That's correct.

Q Are you aware from your own knowledge, sir, of the testing procedures that were involved in the developement of this 7500 series title model vehicle?

A Yes, I am.

Q In terms of your function, tell us what function you played in connection with that.

A That would be the time that I had charge of the test engineers, and I would then be aware of the tests that were taking place on the vehicle through my interchange of ideas and information with the test engineer as the vehicle

was being designed and developed.

Q In other words, as the testing was taking place, whatever that might have been, engineers would have been reporting to you with regard to that testing.

A Yes.

Q Now, in addition to this testing which was done in the developmental stage, was there additional testing that was done thereafter prior to 1966 in connection with the 7500 title model vehicle?

A IT is true that with any product line such as this one testing will take place initially in the development stage, first on the components and then the complete vehicle, before it goes into production components will be added to the product line, such as a new engine or a new transmission. And when that happens, although the vehicle has already been in production, further testing takes place to prove out the integrity of the addition to that new component.

And of course, when that happens then the rest of the vehicle goes along for the ride, if I may use that term, and gets tested over again.

So it's a recycling of testing that takes place.

Q So, if I understand correctly then, the

developmental stage is one series of tests of a vehicle or a prototype of a vehicle, is that right?

A Yes. You test components. The components would be designed into a prototype vehicle. That implies that a vehicle is assembled prior to the production of the vehicle. It is made up of experimental components.

The prototype vehicle is tested then to gain understanding and knowledge of the system, such as windshield wiper, heater performance and that sort of thing, and then finally the complete vehicle is operated on the proving ground in an environment like that that you expect the vehicle to operate in when it is in actual service in the customer's hands.

Q Then thereafter, should you change the engine or something, there would be the testing of the engine within the old vehicle?

A Further tests, that's right.

Q Is that correct?

A That is correct.

Q And of course, you are aware that in connection with this particular title cab that there was a certain configuration of latching systems relevant to the doors of the cab, are you not?

A Certainly.

Q And you are aware that that system was the same from the time the vehicle was first tested, the prototype, through 1966 at least, is that correct?

A That's correct.

Q Now, can you tell us, please, the kind of testing that the prototype vehicle would have been put to?

A Yes.

Q In the developmental aspects of it.

A The vehicle would be operated at the General Motors proving grounds, which is a facility that has been established for the purpose of making available to people like GMC Truck & Coach Division those test courses to which you would want to subject a vehicle before putting it in the hands of a customer.

That facility includes all sorts of road systems that have been developed for the purpose of duplicating the environment in which you expect the vehicle to be operated. There would be hill courses, gravel roads, twist courses, high speed tracks and the one that the vehicle is most abused by would be the Belgian block course. The Belgian blocks is--I believe it is a two and three-tenths mile circle of Belgian blocks, blocks about 9 or 10 inches by 4 inches, which are set in concrete and they are placed at varying levels to give an extremely rough road surface.

Q Are these what we would call cobblestones?

A That would be another term that I think would apply. I'm not certain of what cobblestones are. But with the blocks set on edge and being of varying heights, in the neighborhood of 3 or 4 inches, one to the other, they also are laid in concrete to provide an undulating surface.

The whole purpose of this particular course is to shake a vehicle and subject it to random forces to the extent that you would expect to ever find them outside of the proving grounds.

Q Apart from the Belgian blocks, is there any other feature of this facility that relates to what I would call impacts which the vehicle would experience in various road surfaces of an extreme nature, in other words?

A Encircling the Belgian block test course we have an area that is immediately adjacent to that circle that is what we call a twist ditch. The function of the twist ditch is one of articulating the vehicle.

Q Tell the jury what you mean by "articulating the vehicle".

A Yes. The twist ditch is that 45 degrees with the line of travel of the vehicle. So as you would approach--sitting in a driver's seat, if you were to approach the twist ditch, depending upon which direction you would approach

it, the left front wheel would enter the ditch first and that corner of the vehicle would go down. Next, that wheel would come out and the right front would then go in the twist ditch and the left rear at the same time.

As the vehicle progressed through the twist ditch, the right front would come out, the left rear would come out and the right rear would go in the twist ditch. And what you have done then is taken the vehicle and caused it to be twisted.

Q Is twisting another word for torsion?

A The twist ditch would put what I would call a torsional input into the chassis.

Q Can you describe this twist ditch for us, please? In other words, what does it look like dimensionally?

A It is a ditch that is 9 inches deep and about two foot wide running at 45 degrees across a road bed that would be in the neighborhood of 8 foot wide.

Q And it is in the course of the travel around the course that the vehicle enters this twist ditch situation?

A That's correct.

Q In terms of mileage and testing mileage for the vehicle on the Belgian block on the test track generally andin this twist ditch, can you tell us what the procedures were as you know them?

A Yes. I believe that in the development stage the vehicle was subjected to a thousand miles on the Belgian blocks, the complete 25,000 miles of rough road durability, and in transgressing those mileages it proceeded through the twist ditch once each lap of the two and three-tenth mile circle.

Q So that every time it went around that circle it would have gone into this four-wheel twisting torsional situation you described?

A That's correct.

Q Are reports made of the tests done on the prototype?

A Yes.

Q Did you provide those to me?

A Yes.

Q Following your deposition, where they were discussed by counsel?

A That's correct.

Q Did the testing of the prototype include a body being mounted on the vehicle?

A There was either a body mounted or we sometimes used Belgian--not Belgian blocks--concrete blocks or iron blocks to simulate the loaded capacity of the vehicle.

Q Why do you do that, sir?

A Well, it is necessary to test the vehicle both empty and laden and when you test the vehicle loaded you often do this with a simulated load and it is loaded up to the rated capacity of the vehicle.

For example, if a vehicle has a 9,000 pound front axle and an 18,000 pound rear axle we place loads on the vehicle so as to bring it to those loads as measured on scales at each of the four wheels or six wheels or whatever it might be.

Q During this testing procedure of the prototype the latching system that you're familiar with in this truck was the one in the prototype, is that correct?

A That's correct.

Q Does General Motors 104 in evidence fairly show the latching systen that was in the truck in question here and was the subject of the prototype testing?

A Yes, those pictures do a good job of describing it.

Q And at any time during the course of the testing of the prototype which the engineers reported to you did you become aware of any deficiencies of any kind with respect to the latching system of that vehicle?

A There were no reports of deficiencies in the latching system, the complete latching system.

Q I have a physical exhibit here which I have shown to counsel.

MR. REARDON: Is that correct, gentlemen?

MR. WALKUP: Is that that model truck?

MR. REARDON: Yes.

MR. WALKUP: I would like to have it after the trial.

MR. REARDON: It is promised to several children I know well.

Q Sir, I show you this model which has been marked as an exhibit.

MR. REARDON: It has not been marked?

Q It hasn't been marked as an exhibit.

Does it fairly represent the vehicle in question?

A Yes. That was its purpose.

Q Was this prepared under your supervision?

A That's correct.

Q At GEneral Motors Truck & Coach Division at Pontiac?

A That's correct.

Q As to the sale in terms of the chassis and cab?

A Yes. It was made to one-eighth scale, that is, one-eighth of an inch representing one inch.

Q Are there any features of the model that are not to scale, and if so, tell us which ones, please.

A Well, the rear axle, for example, does--

MR. REARDON: Your Honor, could I have the exhibit brought over to the jury so that it could be shown to them?

THE COURT: Yes.

MR. REARDON: And the witness join me.

I think I better offer it in evidence at this point, your Honor.

MR. WALKUP: I have no objection.

THE COURT: It may be received without objection.

(Defendant's GM Exhibit A 112 received in evidence.)

A Your last question was?

Q Is there anything that is not to scale.

A I was going to point out that the axle housing is not to scale and the axle has depth fore and aft that is not depicted with this particular model.

Q In other words, that differential between the two rear wheels would be sort of bulbous, ball like, is that right, sir?

A That's correct.

Q Anything else that is not to scale?

A Well the rear latch is a simulated latch, but it fairly depicts the latch mechanism that is used.

Q By that latch you're pointing to the latch at the rear of the cab which is hooked onto the chassis, is that right?

A Yes. I am pointing to this latch that attached the cab to the chassis.

Q Would you be so kind as to lift the cab from the chassis just as it would in the actual vehicle?

A Yes. In the actual vehicle the person that is going to tip the cab would pull a lever which would disengage

the hook, he would then lift on the corner of the cab and title in such a manner. I should add that an individual would not have strength to simply lift the corner of the cab to tilt it unless it had--he had an assist of some sort, and that assist is provided by means of a torsion bar which connects between the frame, the chassis, and the cab, so that when the cab is pushed down the tortion bar is twisted, thus providing some sort, so that when he lifts that force helps him raise the cab the next time he wants to lift it.

Q And the tortional bar or feature would be locked on what part of the vehicle?

A It would be locked between the cab in the front at the front mounting point, and the chassis at the front.

Q Is the cab itself, to your knowledge, also made to scale, sir?

A Yes.

Q The tires on this vehicle are not super single tires. I will concede that.

A No.

Q These are what kind of tires or designed to simulate what kind of tires?

A They are scaled to depict 1000x20 tires, which I believe were the tires delivered with the chassis from GMC to Hendrickson.

Q That would have been two 10x20's onthe front, as we see on this model, and four 10x20's on the rear?

A That's right. Dual rear, single front.

Q The other day Mr. Severy indicated in the course of his testimony that the cab was attached at its furthest point at the front of the vehicle to a hat section. Would you tell the jury first or show them on this exhibit what a hat section is.

A Well, first--

Q If you want to lift the cab, lift the cab.

A Well, there are several hat sections along here. This cross member is a hat section. If you were to cut that member and look at the end you would see the brim of the hat, the crown of the hat and then the other brim, and that's where the term hat section comes from.

At the front of the vehicle there is a hat section cross member that I am pointing at, but the cab is not attached to a hat section, it is attached to the frame side rails, which are channels, and that is this frame side rail, if you were to cut it, or the other side, and look at the end of that frame, you would then see a simple "C" in section which we call a channel section.

Q So that Mr. Severy was incorrect in his recollection of the way this was connected at the front, is that

right, sir?

A Certainly either incorrect in his recollection or his terminology or whatever he was describing.

Q Could I bring this over and could you show the jury the hinge points, please, at the front of the vehicle?

A You can see as I tip the vehicle, the cab--

Q Turn this way so the people can see this.

A The cab, this beam cab structure, the black portion I am pointing to, is attached to a bracket that I am now pointing to, at which through a pivot point at the top of that bracket the cab pivots. In other words, it is pinned to a bracket which becomes a part of the frame and the cab is free to rotate at that point. So that would be a front mounting point for the cab.

Q Does this drawing that I am showing you fairly represent in more detail the manner in which the cab is attached to the chassis?

A Yes, it does. It begins to describe the detail parts better than you're able to do with the smaller parts in a model, a scale model.

MR. REARDON: I would offer it in evidence.

MR. WALKUP: No objection.

MR. SCHWAB: Voir dire, your Honor.

VOIR DIRE EXAMINATION

BY MR. SCHWAB:

Q Sir, I would just like to be clear about one thing. On your model here these cross pieces, what would the term be in the automotive industry for those?

A They would be called cross members.

Q I just want to be sure of one thing. Is this model a fair and accurate representation generally of the number of cross members and their locations on your chassis?

A A product line contains many wheel bases, the wheel base being the distance between the front and rear axle, and the number of cross members in a frame varies with the length of wheel base of the chassis. You can see the visual aid, which was constructed for the purpose of whoing the cab mounting, has different cross members than does this model.

Q You have anticipated what I am getting to obviously, sir. What I am trying to clarify is this:

Let's get back to A 84 for identification. I am not involved or concerned with the cab. Just insofar as it shows anything in the rear here in this drawing, such as the cross members, is this drawing intended to accurately reflect location and number of cross members?

MR. REARDON: I would indicate that it is not, your Honor. We are just trying to show the contact point

of the cab on the chassis.

MR. SCHWAB: All right. Then I certainly have no objection.

MR. REARDON: The vehicle, the model, is another matter.

MR. SCHWAB: I understand.

MR. REARDON: With that understanding, no objection.

MR. SCHWAB: Fine.

(Defendant G.M. A 84, received in evidence.)

BY MR. REARDON:

Q Would you be so kind as to show the jury in a little more precise fashion the manner in which the cab is mounted at the front.

A We showed on the scale model some brackets coming-- let's start with the frame is made up of frame side rails, which are the channel sections along the side, and cross members inbetween the two frame side rails. We will call that the frame assembly.

Now, attached to the frame assembly are some substantial cast brackets that were depicted in the scale model. The cab, through a bracket coming off the cab, which is this piece, attached to that frame bracket.

The same is true on the other side, with a bracket

off the cab, and the two attach, brace solidly, to each other through a bar over which it can rotate. The frame assembly then continues rearward, as does the cab assembly, to the rear mounting area, and at the rear, being one left side rail and a right side rail member, is another cross member, horse collar in shape, going from one side member to the other.

Q On the chassis?

A That is depicted by this member in the scale model, going from one side rail to the other. I think it is better shown here than in the visual aid, except in the detail of the latching. But this cross member then is the only point where the rear of the cab is supported.

Back to this, that being the cross member, this being a member in the cab as a part of the cab structure, the cab then sets on the frame at that point at nearly a single point. There are only about six inches spacing between the two rubber biscuits at the rear, whereas in the front they are spread the width of the frame.

Then the cab is held on those biscuits at the rear by a hook, such that when the cab comes down the hook engages the frame and the cab is then setting on the rubber insulators.

Q Can you show the jury the rubber insulators on the

model, please?

A Yes. They are these two pieces. They then meet this member on the underside of the cab. Picture the cab coming down, setting on those, and then a latch being placed in position so that the cab cannot raise up off of those inadvertently.

Q You mentioned the biscuits at the rear. These two pieces of rubber, again, are not to scale , they are just designed to simulate the function of those two rubber pieces.

A That's correct, yes. The rubber piece in actual real life would be about four inches by three inches with two inches of depth and it would be too small to depict.

Q What do you call this kind of moutning system, the system under which the cab is mounted to the frame or chassis of the vehicle?

A Well, we in the truck design business call it a three-point mount as opposed to a four-point mount. A three-point mount, I usually describe it like a milk stool. With the three legs it is designed such that if you set it on the ground or on an uneven surface it will assume one plane. In other words, the three legs can search out the plane that you're going to set it on. If the ground is not level it will tip to one side and assume that ground level or that unevenness of the ground. If you move it to another place

it will set very level or very square, but assume another plane, another angle. That's what you do with the cab.

The purpose of the three-point mount then is if the frame from front to rear wants to assume a different level at the mounting area, if you have the three points, then the cab will set on those three points without being disturbed.

The same things is true with the milk stool. That is the analogy I am trying to draw there.

Q Could you with the aid of that model show the jury the mann in which the chassis and the cab inter-react with this three-point mounting system in effect as the vehicle goes through various motions under road conditions.

A Well, as the vehicle--

Q Just a second.

A If a vehicle were to go over just straight vertical inputs it would only--it would bounce down the raod. That is the typical Belgian block operation. The vehicle goes around the blocks and it 's hitting these blocks that are four or five inches displaced, it just goes around shaking and bumping.

When it comes to the twist course, that I tried to describe to you in words, the front wheel going in first,

then the next wheel and then the next, and what results then is the vehicle then is twisted. You could do that by simply pushing the wheels. Can you see how the frame from one end to the other turns as you travel the length of the frame? The vehicle is designed to accept that.

If you did not have a three-point mounting system and you were to do that you can see that the frame from here to here, which is the rear of the cab to the front of the cab, becomes twisted, and if the cab were attached securely to the frame over that distance then the cab would have to be twisted also. We try not to do that by mounting it at one point in the rear, thus the milk stool analogy, so the cab will not be twisted.

Q Maybe if I could hold down the rear you could twist the front, indicative of the front of the truck experiencing some kind of a twisting that can be demonstrated more effectively.

Is the same true of the rear; in other words, changes in road surface dimension that it might experience--

A I think just leaving the front on the ground you can do the same thing by twisting the rear axle. That was the major purpose of making this scale model, to show that the frame must have tortional compliance. In other words, the frame cannot be so stiff that it will not twist. If it were

to break rather than comply as you went through a ditch you would have problems with the frame, and it is necessary that the vehicle does have the ability to negotiate these twist courses, an accepted fact in the design of the vehicle.

Q Is it so that the only point at which the cab itself is afixed to the frame is at those mounting points at the front?

A Two at the front and one at the rear, yes.

Q I think you can get back in your seat.

You have indicated you're familiar with the latching system involved in this particular vehicle, and I am showing you now Plaintiff's 74 and 75, which are in evidence. Do you recognize those as the latching device and the striker that would have been assembled in this vehicle at General Motors?

A Yes, this being the latch and this the striker assembly.

Q Will you explain to the jury, please, the latching system as it was installed by General Motors at the time the truck here was manufactured, and if it would be of any assistance, I ask you to please use Plaintiff's 104 to describe the various features of it.

I would also ask you utilize--I think maybe you better come over a little closer--these various strikers,

all of which are marked 105A in evidence.

A I understand that the Court has had this explained to them before, this being the latch assembly and this the striker assembly. Those are two parts of the system, the latch being in the door and the striker being on the lock pillar. They are part--

Q Do you call that pillar the "B" pilar?

A That's common terminology in passenger car. In truck there, you know, generally isn't an A; B; C pillar, and we generally refer to it as the hinge pillar and the lock pillar, but it would be the A and B pillar if you want to put it in passenger car terminology.

THE COURT: Which would be the lock pillar.

THE WITNESS: The pillar in which the striker is mounted. I believe that is just terminology, sir, which you might choose to use.

A I made the statement that the latch is in the door, the striker is on the B pillar or lock pillar.

Q This is the latch I am holding in my hand, right, Plaintiff's 74?

THE COURT: What position is it in?

Q You show you jury where that would be in this vehicle.

A It is mounted. You can see the rocker and its

shroud protruding through the door. So it is mounted in that manner on the inside of the door.

Q Could we take a red markeer, please, and circle the rotor and cover of the rotor. Just put a sufficiently wide circle around it.

THE COURT: What is that, the rotor?

THE WITNESS: This photograph depicts the rotor shroud protruding through the door inner panel. That would be this part and this part are seen in this photograph at that point. You can also see the mounting screws.

Q Turn the object around so the jury can see it.

Q You can also see the mounting screws here, here and here, that is, there, there and there. That mounts that to the inside of the door (indicating).

Q We have a physical exhibit here, which is Plaintiff's 73 now in evidence, which shows the opening, does it not, through which the rotor would have come with the shroud, the point which you have just pointed out to the jury and circled on that Exhibit 104, is that correct?

A That's correct.

The other portion of the locking system is the striker plate which is mounted on the door opening at this point as indicated by the arrow and, as it says, lock striker plate, and that is mounted then against the B pillar or lock

pillar, as you chose to call it. Those are two of the parts and important to the complete system are the upper and lower strikers and they are located in the door opening, the door frame, at this point as indicated by the circle and arrow and the exploded view.

Q Is this physical exhibit the upper striker that is shown in the upper lefthand corner of 104?

A That's correct. Then there is a lower striker, as shown in this same view that the lock striker plate is shown. IT is called lower striker support.

Q Is that this object here, sir?

A Yes. Then in the door or on the door is a mating part that engages both the upper and the lower strikers, and again, with following the arrows, you can see the part that is the mating part affixed to the door that engages the upper striker support and then on the door is a spring loaded lower striker.

Q Is that this object here, sir?

A That's correct.

Q Would you show the jury what spring loaded means?

A As this device is mounted in place on the door and it engages the striker, as the door comes around, engages the striker, the fit is such that the distance between the two

strikers is larger than the distance between the door opening. Then this part then has a spring which allows it to slide rearward, making certain that the door and its strikers then do fit the opening , and you need this compliance of the spring to make sure that happens.

Q Could you show the jury the way the strikers--let's take the upper strikers, one on the door in the upper right and the one on the cab in the upper left--how they will mate when the door is closed. Take the two physical exhibits and demonstrate that to the jury, please.

A This is the piece that is on the cab and mounted in a manner that the less depth is toward the outside of the cab.

Q Please show the jury the depth on that, will you? It's a small part. Bring it over to them and show it to them.

A To go back in context now, it is mounted on the cab at the upper portion of the door opening such that the thickness is less to the outside of the cab than to the inside of the cab. So picture that on the inside with the door open.

Q Show the jurors at the end as well, please.

A I am facing the door opening and I am looking at this mounted at the top of that door opening. It is thinner on the outside than it is the inside.

Q Would you show them how the two pieces mate, please.

A AGain, I am facing the door opening and I have the door in front of me. This is mounted to the top of the door. As the door comes around to a closed position it engages that striker and wedges itself against it. If you can picture this at the top, those two having engaged in each other and being in firm contact.

Q Do the same thing with the bottom, please, the two bottom strikers.

A If I can find it I would. Here it is.

Again, on the bottom--

Q Would you step back, please.

A This is on the bottom of the door opening at this location, this being the door opening, and this is on the door at this location, so that they will engage when the door is closed. So again I am facing the door opening and you can see that the thin portion is to the outside of the door, the thick to the inside, and the same is true of the spring loaded striker which was mounted to the bottom of the door. Picture the top being in contact, this coming around with the door and engaging that ramp or wedge surface, and it-- I can't push it hard enough. I have to push it with my finger. But you can see as it filled the opening, and the

door wasn't still closed, what would happen. It would force that edge rearward and allow the door to go into its primary locked position with the door opening completely filled with the door by nature, these wedges being in contact. That is the point I wanted to make certain we all understood, that it is a complete latch system with the striker, the latch and these wedges being an integral part of holding the door in its door opening.

MR. WALKUP: May I ask a question, your Honor, for clarification, because it is difficult for me to see as well as the jury, with reference to the spring loading.

Did you indicate that that spring is such that you can actually push it with your finger, is that the tension of that spring?

THE WITNESS: Yes, I can push it with my finger here and now--

MR. WALKUP: And you were doing that as they came together, it takes just that much force to load the spring?

THE WITNESS: I can't take the two pieces with that ramp angle and--

THE COURT: Is that supposed to engage that spring?

THE WITNESS: The spring is not a part of engagement. As these two pieces would come together, this being on the door, the door swinging into position, when it hits it

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wedges the door in the position.

Now, if you were to have that fixed so that it was not spring loaded and you forced the door into position you would very likely fill the void between the two wedges, top and bottom, before the door got fully closed. So you have to have some compliance in that such that that will slide rearward, like that, as it comes into position. It's difficult to do. I have to push it out of its approach angle so as I can force it. But you can see that allows this piece and this piece to come closer together when the spring is compressed.

MR. WALKUP: My question was--

THE WITNESS: That compared to that.

MR. WALKUP: My question was in demonstrating--

THE WITNESS: Did I make that clear, sir?

THE COURT: When you use the expression--well, you put your question.

MR. WALKUP: In demonstrating it appears you are having difficulty making the spring go back because those two pieces are not affixed to anything, but with your finger you can push that spring back quite easily, is that correct?

THE WITNESS: That's correct.

MR. WALKUP: All right.

Q In other words, when you slam the door, if one were inside the cab and pulled the door shut, the force of the door coming around would be equivalent of the force that would be put on that spring loaded striker to bring the two pieces together, is that correct?

A Yes. I could attempt, if you wanted, to show a normal force and a tangent force on that wedge which causes it to compress the spring, but I think that would only complicate the matter. I believe it is sufficient to say that when you have the spring compressed the door can be cloer to the door opening than when the spring is uncompressed and the distance between those two parts is enlarged, and that is the purpose of the device, to cause the door to fit the door opening by having a variablity between these two parts caused by compressing the spring.

Q Mr. Severy the other day said, sir, that these four strikers that you've shown us, two on the cab and two on the door, were designed for anti-rattle purposes. Do you agree with that?

A I do not. I think that is incidental, that they prevent rattle. It is evident, in my mind at least, that that's a lot of work to go to, a lot of design effort and thought to go to, to prevent a rattle. If I wanted to prevent a rattle, I would apply a piece of rubber to the top and bottom, which would stop the door from rattling.

But they are designed as an integral part of the door latching system.

Q Now, can you now, wiht all of these before you and before the jury, explain to the jury the manner in which these strikers operate and their design purpose with the door of that cab closed and the vehicle proceeding along the highway? In other words, what is the significance of them being there? How do they operate during the course of travel?

A I had hoped that I had gotten the point across that with these two pieces -- well, with the two pieces attached, with wedges at both the top and the bottom of the door, and swinging a door between those two wedges, causing it to fit in the door frame, the door is fixed in a vertical position

so that it cannot jounce up and down.

The distance between the two wedges is a fixed dimension on the cab, and the size of the door is fixed such that it will go into that opening. Any difference in dimension between the door and the door opening is taken up by the wedges. So that the door becomes an integral part of the door opening.

So, with the door fixed in the opening, we have experience then that the striker, when it engages -- the latch is in the door and the striker is on the door opening at this location (indicating). So, with the door fixed in the door opening and with this on the door opening and this in the door (indicating), that dimension of this piece relative to this place (indicating) is fixed also, and the engagement of the striker and the rocker is a fixed engagement.

Q Is it capable, in your opinion, of vertical movement, with the various strikers in the engagement of the rotor and the striker as you've just described it?

A I didn't understand the question.

Q Okay. It is a bad question. Maybe I'll ask it another way.

Let's talk about the situs, the place at which these strikers are designed to be. Is that of any relevance?

A Oh, yes. The front of the door is fixed to the door opening by the hinges, and so the front of the door becomes very profoundly located with respect to the opening.

It is important then, as the door comes into the opening, that these strikers be as far rearward as is feasible. So that they positioned the rear of the door in the door opening as is designed by the design.

Q Why is that important, to get these strikers as far rearward as you can from the hinges?

A I'll try to explain it in a negative sense. If they were clear to the front, they would only be assisting the hinges in the position of the door. Having them to the rear positions the rear of the door. So it is beneficial to have them to the rearmost position. They lend support between the door and the door opening.

THE COURT: We will take a recess now.

(Recess)

BY MR. REARDON:

Q Mr. Forester, you are familiar with the latching feature of this syster, are you not? What I'm showing you now are three photographs to which three Polaroid pictures have been attached. They are in evidence as General Motors A88, A85 and A89. The Polaroids which are attached have numbers of their own.

Would you very quickly, because the jury has heard a good deal about this already, explain to the jury the various phases of the locking mechanism as it relates to the latch and the various positions that the interiod side of the latching portion of the latching system assumes? What is that that is shown there?

A This is the sector to which the rotor on the other side is attached. This is in the primary position. The second notch is secondary. And, of course, when the outside button is pushed, it actuates this out of engagement, and the spring forces the rotor to an unlocked position.

Q And that in turn turns the rotor, which is on the other side?

A This and the rotor are directly attached (indicating).

Q Would you show the jury the direct attachment between the two pieces, please? Come over toward the center because all the jurors want to see.

A This is the piece that is shown in the photograph, and it is attached to the rotor through this shaft.

Q What position do you have that latch in at the moment?

A That is in the primary position.

Q Primary position means what, sir?

A That is the position that the rotor will be in when

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the door is fully closed. A person has slammed the door. It is in adjustment and it goes fully closed when the rotor ends up in the primary position.

Q All right. Would you show the jury the position of the rotor when it is in the fully latched, or primary, position? Turn the object around.

A That is now in the primary position (indicating).

Q All right. Would you make believe that you are on the outside of the vehicle and you press the door handle, and would you show the jury what happens to the rotor and the back of the rotor when that occurs? Somebody is going to open the door.

A When you push the button on the outside of the door, there is a plunger between the botton and this lever (indicating).

Q Turn the rotor toward thejury so they can see it move when you talk.

A When you press that, you can see that this piece is spring loaded. See, this is a coiled spring, and it is applying force to that pin, such that when I press this I am going to pull this out of engagement, and that is going to rotate to you. It will be in a clockwise direction.

This, being attached to the rotor (indicating), is going to cause the rotor to move. So it does that

(indicating), and now the rotor has gone to a full open, or unlatched, position.

Q Would you show the jury what has been referred to as a secondary position?

A I just pushed it into the secondary position, and that is the second notch in this sector plate on the back side, which is attached to the rotor. So the rotor will be in this secondary position when a pawl is locked into the second notch.

Q Now, what is the secondary position in terms of the use of the vehicle? What is its purpose?

A Its primary purpose is to provide a catch on the door to keep it from swinging full open when it was not fully closed.

Q In other words, if somebody neglects to slam the door hard enough, the secondary position is sort of a safety to prevent thedoor from just flying open?

A Yes. It will catch. If someone were to move away in the vehicle, the door would be caught in a secondary position and it would shake or rattle in its door frame, warning the person it was in a secondary position.

Q Now, in Plaintiffs' Exhibit 99, which is a drawing done by Mr. Ehrlich, he has drawn the rotor, and I'm pointing to it now. Is that the position that the rotor would

be in in the secondary position?

A It impresses me more as being nearly horizontal, which would be a secondary position, as depicted in the sketch.

Q Now, while you are up there, is there a further technique that this system provides whereby, after the latch is placed in the primary position, fully latched position, the person inside the cab can apply a further locking technique?

A Yes. By pressing the inside door handle forward (indicating) --

Q Show the jury. I think the picture might be better in the first instance. You've got it in that picture --

A Do you have it locked?

Q We don't have any pictures of it in the locked position.

A You nearly do.

Q Why don't you work with it in the primary position and then show them on the physical exhibit.

A All right. As we said before, this pawl, or sector plate, is in a primary position, that is, with the rotor rotated into a position to provide the greatest engagement of the striker plate and the rotor.

When it is in that position, then, by pressing the door handle, inside door handle forward, a rod going from the handle to this lever (indicating) will pull it into a position such that pressing on the outside then will not release the rotor.

Q And that's the internal locking --

A Internal lock to prevent someone from the outside getting into the vehicle.

Q All right. Would you resume the stand, please, sir?

A Yes.

Q Now, Mr. Forester, based on your knowledge of the design of this vehicle and the latching system involved in this vehicle and your knowledge of the testing of the vehicle in its developmental stage and thereafter and your knowledge of the use of the vehicle since it began to be a model produced by General Motors in the early sixties, do you have an opinion with a reasonable degree of engineering certainty whether this latching system on this vehicle was suited reasonably for the purpose for which it was intended and used?

A I do.

Q What is your opinion, sir?

A In my considered engineering opinion this latch

was entirely satisfactory for the purpose intended and the use to which it was applied. I think that the history of the latch in service bears out that engineering opinion.

Q Do you have an opinion as to whether this latch was defectively designed?

A I do.

Q And what is your opinion in that respect?

A I do not think it was defectively designed.

Q Can you tell us the reasons for that opinion?

A The latch is made of high quality parts, put together in a high quality manner, and it has demonstrated good service.

Q What do you mean by "demonstrated good service"?

A I know of no field problems developing from the latch over an extended period of time, where nearly a million latches have been in service.

Q You were here for part of Mr. Severy's testimony, is that right?

A That is correct.

Q And you are aware that he has testified that this door was caused to be opened by reason of "nominal forces" being imposed on the latching system. He also described these forces as having resulted from the twisting of the chassis of the vehicle during the course of its operation

prior to turning over.

Do you have an opinion now, sir, with a reasonable degree of engineering certainty, whether the introduction into the chassis of this vehicle as manufactured by General Motors of these nominal forces to which Professor Severy referred would have the effect of causing the latching system to separate and the door to open?

A I have an opinion, yes.

Q What is that opinion?

A Again, it is my considered engineering opinion that nominal forces would not result in the door coming open either by twist or any other nominal force.

Q In terms of the structure of the latching system, can you tell us what your opinion is based upon?

A I would go back to the description of the latch, striker plate and the uper and lower strikers on the door being a complete system, which hold the door in the door frame such that there is a half inch engagement of the striker plate in the rocker, and with that integral system I do not see the possibility of nominal forces distorting or pulling anything out of shape to the extent that it would come unlatched.

Q Does the capacity of the chassis of the vehicle to absorb road modifications, in other words bumps and things

of that sort, in any way enter into your opinion?

A As we demonstrated earlier, I think -- I assume you have reference to the fact that the vehicle mounted a curb, and I hope to have demonstrated that with the three point mounting system of the cab that the cab is isolated from the tortional inputs that the frame was subjected to when it did mount the curb, and thus the distortion of the cab is minimized by the mounting system.

Q Now, Mr. Forester, I want to put a rather lengthy question to you and ask you to bear with me. I want you to assume the following facts to be true:

That the vehicle in this case, a picture of which is in evidence and the jury has all seen it as completed, was delivered to Jersey Central Power & Light in June of 1967, after having a GMC 7500 chassis modified by Hendrickson to include a Colman front axle and super single off the road tires;

That after Hendrickson completed its work the vehicle was sent to Pitman, where it had a body mounted on it and a Polecat boom mounted on it, which was mounted to the rear of the rear axle;

That the vehicle was used by Jersey Central Power & Light after some early repairs in July of 1967 for approximately two years and six months in both on the road and off

the road work;

That approximately sixty percent of the work the vehicle performed was on the road and about forty percent off the road;

That during the course of the use of the vehicle the right front door or either door never was caused to open or pop open unless it was intended to do so by one of the passengers through actuating the handle which opened the door.

Assume further that on the morning of February 4, 1970 this vehicle, which was then carrying a trailer to its rear, left the yard of Jersey Central Power & Light at approximately eight o'clock in the morning, that the truck was being driven by a man by the name of David Burlew, who it would appear had either never driven this vehicle before or at least had never driven it for any significant distance or under conditions that existed that morning when he left the Farmingdale yard.

Assume further that the weather conditions on that morning were extremely hazardous, that the roads were slippery and icy, that snow had fallen and there was a wind blowing in excess of twenty five miles an hour.

Assume that the vehicle traveled on that morning a distance of about nine miles over rural roads to the point

where it approached an intersection on U. S. Route 9 in or near Freehold, New Jersey.

Assume that as the vehicle approached the intersection, that the driver, David Burlew, applied his brakes when he saw the traffic light at the intersection ahead of him change to amber; that the vehicle was equipped with air brakes and immediately upon the application of the brakes the vehicle went into a counterclockwise spin, with the trailer trailing behind, so that the vehicle came to a position perpendicular with the road, during which time the front wheels, first the left and then the right, mounted the ten foot median divider, and that thereafter the rear of the truck continued in a counterclockwise direction until the right rear tire and rim struck the concrete median divider, which was approximately eight to ten inches in height from the road surface.

Assume further that at the time of the impact of the right rear tire with the divider the rim of the right rear wheel gouged concrete out of the curb; that upon the impact with the curb the bead of the right rear tire gave way, causing the loss of air in the right rear tire; that thereafter the right rear tire mounted the median divider and the vehicle continued to be dragged diagonally across the divider until the front wheel entered the southbound

lanes of Route 9, at which time the vehicle toppled over in a slow motion maneuver onto its right side.

Assume further that during the course of the travel of the vehicle after it mounted the divider and struck the curb with its right rear that the right front door of the vehicle opened and the right front passenger was partially ejected, sustaining injuries.

I want you to further assume that at the time of the occurrence of this accident the vehicle had a gross vehicle weight of between 30 and 32 thousand pounds, that the trailer weighed between 3 and 4 thousand pounds and was unloaded at the time; that although the trailer had a braking mechanism which could have been employed, it had not been employed or attached on that morning; that the vehicle was traveling at a rate of approximately 25 miles an hour when it went into the skid and the driver lost control; that after it went into the skid it seemed to pick up some speed.

Finally I want you to assume that the testimony of Mr. Severy is that the kinetic energy of the vehicle at the time of its counterclockwise manauver was in the range of approximately 580,000 foot pounds; and, lastly, that after the occurrence of this accident and upon examination of the vehicle it was determined that the frame of the vehicle, the chassis of the vehicle, was bent to the point

where it could not be fixed but had to be replaced, that it was beyond repair.

Now, based on these facts, I want you to tell me first whether you have an opinion with a reasonable degree of engineering certainty what caused the door to open on that morning of February 4, 1970.

A I do have an opinion.

Q Would you state it, please? And after you state it, would you please tell us your reasons as best you can?

A Again in my best engineering judgment, considered opinion, there are two alternatives, the first being one associated with the fact that the vehicle as described was traveling 20 to 25 miles an hour when it hit the curb.

That would have caused a severe deceleration of the vehicle, and the occupants, or at least certainly the unbelted occupants of the vehicle, would then be jostled about inside the vehicle severely, the vehicle being decelerated, and they as a free body inside the vehicle keep traveling.

And then, secondly, again as a considered engineering opinion, if we assume that the first is not true, then, secondly, the vehicle, particularly when the right rear wheel struck the curb, was subjected to having the kinetic energy -- as described by Dr. Severy, the vehicle was subjected to extremely high forces to the extent that

the vehicle was badly deformed and distorted -- showed that the vehicle was subjected to those high extreme forces that resulted in that latch separating, and I would further add that most any other latch or any other latch would separate under the same circumstances.

Q With regard to the opening as a result of this jostling you told us about, could you show the jury, with the aid of the model, what you mean by that in terms of deceleration? How would it be reflected in the vehicle? I mean the truck model. This is the vehicle having the first two impacts with the curb.

A I picture the vehicle as traveling 20 to 25 miles an hour, which is a substantial speed, and the people are inside the vehicle, observing this maneuver taking place. And as the vehicle hits the curb, I understand with the left front first, there would certainly be some deceleration of the vehicle.

Q That means slowing the vehicle down?

A Yes.

MR. WALKUP: I'll stipulate that's what it means.

Q Go ahead.

A A person sitting in a seat when the vehicle is decelrated does not necessarily decelerate at the same rate

that the vehicle does, and thus he moves.

When the vehicle then rotated and the right front hit, again the vehicle decelrated and the people inside the vehicle,again unrestrained, would move about inside the vehicle.

And certainly as it came on around and the right rear hit to the extent as you describe, gouging concrete, tearing up grass, the vehicle soon came to rest in a short distance, which means that it certainly did decelerate quite rapidly. And when the vehicle decelrates and the person sitting inside the vehicle is unrestrained, he will jostle about; he will continue to try to move until he strikes something which stops him, and then he is decelerated.

Q When you say he moves, he moves, I take it, involuntarily.

A That's correct.

Q As a result of the maneuver of the car, the truck.

A I would ask you to think in terms of a -- I'm sure you've seen crash tests on TV, where passenger cars have been run into barriers. Those are generally run at 30 mile an hour, and you have observed the dummies that they strap into the vehicles, how they will move about severely.

Now, there is an analogy of 30 mile an hour

hitting a barrier to this truck traveling at 25 miles an hour hitting the curb as a barrier. It didn't stop instantly as it does with the passenger car hitting the barrier, but it stopped in a relatively short distance.

So the deceleration rate was severe, and it is my considered opinion that the person setting in the right passenger seat, unbelted, would have trouble maintaining one position in the vehicle and he would move about in the vehicle, providing the opportunity of possibly striking the door handle inadvertently. That's the first proposition.

Q Okay. The alternative that you mentioned was -- I don't want to restate your testimony. Would you tell us what the other alternative was.

A I'm not sure of my exact words, but I believe I said that assuming that that is not true, which I believe has been a matter of conjecture on the part of the assembled group, if that were not true, then the door was opened by nature of extreme forces being applied to the cab and door as an assembly.

I think that is witnessed by the fact that the frame, the repair orders that were subsequently generated, shows that the frame was badly distorted and the vehicle had to be subjected to extreme overloads that are not a part of

the designed scheme of things. Because the frame is designed to carry tremendous loads. It was a heavy duty frame. It was reinforced. And it was subjected to all the normal tests that they previously qualified in proving ground operations.

So, to have been placed in a deformed condition, having hit the curb, shows me that the kinetic energy of the vehicle generated tremendous forces which did have the possibility of getting into the cab, distorting the cab and causing the door to come open.

MR. REARDON: Thank you very much.

CROSS EXAMINATION

BY MR. SCHWAB:

Q Mr. Forester, getting back to this very fine model in evidence, do I understand then, just so I'm clear, that these cross members on the chassis frame rails are representative of the general location and appearance of what was on the 7500 series truck involved in this accident?

A I'm not certain of that, sir. As I pointed out earlier, the wheel base of the vehicle will dictate how many cross members are in the chassis and at what location they will exist, and I don't know that that scale model is a direct duplication of the vehicle in question.

Q Well, I think that the vehicle involved in the

* * *

it had duals or a single, the same level of force could be generated.

Q That is what I am saying. And that same level of force, the way it has been described to you, can be enough to turn over a truck; correct?

A I think it did, yes.

Q And it could be enough to turn over a truck whether it has duals or singles; correct?

A You are taking me off into an area that I suspect is in controversy here, and I really don't --

Q You don't want to get involved?

A Pardon?

Q You don't want to get involved?

A Well, I really don't know.

Q All right.

A My statement was, though, that if the truck slides into the curb with either duals or singles, I think that there is a possibility of generating this extreme force to cause distortion of the frame.

MR. SCHWAB: Thank you. No further questions.

CROSS EXAMINATION

BY MR. WALKUP:

Q Mr. Forester, I am going to ask you a few questions, first about the testing procedure there at General Motors,

and I take it that one of the main reasons you do that is for safety of the ultimate user of the vehicle; correct?

A Yes.

Q So that as the history of development of vehicles has gone along, you at General Motors as well as Chrysler and Ford have tried to work out testing procedures that would be compatible with safe operation of the vehicle and its component parts by the people who would ride in the vehicle or be subjected to it in some manner once it gets out in the roadway; correct?

A Correct.

Q So that we will understand what you are telling us here about the testing of this vehicle, you had a prototype of your standard 7500 series chassis back in 1956, was it?

A No.

Q 1965? What year was this prototype developed and tested?

A The prototypes would be prior to production, which was 1960.

Q So back in 1960 you developed a prototype of this vehicle with dual tires on the rear and single tires on the front as you have demonstrated here in the model and the tilt cab; correct?

A Correct.

Q That would be approximately six years before this vehicle involved in the Lane case even came into anybody's thoughts.

A Correct.

Q The prototype that you tested was one with dual wheels on the rear similar to the model; correct?

A Correct.

Q And I take it -- I don't have a ruler here -- but just measuring grossly, from outside of the front wheel to the outside of the back wheel here, it would appear to me that the back wheelbase outside dimension is greater than the front wheelbase side-to-side outside dimension; am I correct?

A I think so, yes. You have demonstrated that.

Q Can you give us the figures as to how much wider the duals make the truck in the rear than the prototype was made in the front?

A I do not have that dimension in my mind or on record here any place.

Q I take it from what you have already told us about your concern with safety, one of the reasons that you make the rear duals on this prototype at least as wide as the front and apparently somewhat wider has to do with the stability of the vehicle in operation, does it not?

A Ask the question again.

Q Yes. I say I take it that the fact that you designed this vehicle with the outside dimensions of the rear dual wheels wider than the front wheels takes into consideration the stability of that truck in operation; correct?

A Yes, it takes into consideration the stability of the vehicle. There are just physical factors that cause it to be that way too. As you can see, if the frame is 34 inches and you stack up parts as you move outward, it's going to end up at that width. There is not any space left to make it less wide.

Q You as an engineer I think can tell us with some degree of certainty that if I were to take off this outer dual on each side, so that instead of ending up with the prototype of this style you ended up with one with the front wheels considerably wider than the rear wheels, that that would affect the upright stability of that vehicle, would it not?

A I think that is an engineering fact, yes.

Q A fact of life. You know that this prototype that General Motors designs and tests out there is going to be used by various people with various kinds of big bodies or superstructures on the back of the chassis in the normal trucking industry; right?

A I would say that the General Motors knows that the

vehicle is going to be used in a variety of circumstances and services, and designs the vehicle primarily to carry so much weight on each of the axles.

Q Right.

A Now, how far and how wide and how high we never know, of course.

Q Does General Motors itself, as of the time this vehicle was made, make some types of vans or cabs to go on the back or do you just make the chassis?

A Rephrase it so I will understand the question, please.

Q Yes. What I am asking, sir, is: Did General Motors back in 1966 and 1967 ever turn out complete General Motors units with some kind of a van or stake truck or anything on the back?

A No, we do not.

Q The chassis. But were you aware, then, that various types of superstructures would be mounted on there by various people who later had the chassis?

A We are aware that the truck is sold for commercial reasons and obviously bodies of a variety will be placed on the vehicle.

Q Going, then, further on the subject of safety, to the door latch: In your designing of this door latch, I take

it that for purposes of safety to the ultimate consumer and user of this truck, you were interested in the integrity, if I may call it that, of the door latch system so as to prevent untoward or unplanned opening of the truck door in operation, is that right?

MR. REARDON: Objection, your HOnor.

THE COURT: I will allow it. You may answer it.

THE WITNESS: Answer it?

THE COURT: Yes.

A The door latch system was designed to provide a positive locking system to the best of our knowledge at that time.

Q At what time?

A At the time the vehicle was designed.

Q 1960?

A Correct.

Q So I take it at that time you were aware, if you wanted to use the most positive locking system available at that time, of what the state of the art was as to door latches in 1960, correct?

A I would say that's correct.

Q And you have indicated from time to time with your prototype there might be changes or improvements added as these came along, and then the whole prototype would be

retested over the Belgian blocks and so forth?

A I did indicate that, yes.

Q So I would take it that at least in some part of this chassis, from 1960 up to 1966, General Motors added somethings they at least thought were improvements to the truck in various particulars; correct?

A I would only add that the changes in a vehicle are generally dictated by the marketplace, such as the addition of a Diesel engine or a multi-speed transmission or whatever.

Q Aren't they dictated by safety to any extent?

A That is obviously a leading question, of course.

Q Yes, it is. This is cross-examination.

Sir, you showed us a model; let me show you a model. Let me show you a model here, Plaintiffs' Exhibit 76. I ask you to take a look at that and ask you if you can tell me what kind of a latch that model has.

A Yes. I believe it's called a fork bolt latch.

Q A what?

A Fork bolt latch.

Q Is that a different type of latch from the latch that was on the truck which you demonstrated here to the Court and jury?

A Yes.

Q Does it work on a different principle?

A I guess I don't know exactly what you mean by that.

Q Is it referred to in the industry as an anti-burst latch or a safety latch or a completely encapsulated latch?

A I don't know what the industry refers to it as. It is, in my opinion, a latch that is a totally encapsulated, or the latching mechanism in its entirety is in one location on the door.

Q Is it sometimes referred to as the interlocking safety door latch?

A I don't know that.

Q Are you a member of the Society of Automotive Engineers, sir?

A I am.

Q Do you follow their proceedings and try to keep abreast of the safety developments that have come along in the fifties and sixties with relation to the door latches?

A In a general way, yes.

Q And you do that because, as head of the design division and as chief design engineer on these trucks for General Motors, you are interested in, to at least some extent, safety features in the state of the art that would improve the safety of these large trucks; correct?

A Certainly.

Q That particular latch that you have there, can you tell me from your general knowledge as of the state of the art when that type of latch first became available and was used in the United States by auto manufacturers or vehicle manufacturers?

MR. REARDON: Your Honor, I think we ought to distinguish now between trucks and cars.

THE COURT: You may do that on redirect, Mr. Reardon.

A I don't know exactly when this latch became available. I do know that it was first applied to some General Motors passenger cars, and I am not sure at what time, what date, what year that was.

Q Are the SAE reports and journals that are published by Men of Science generally, that is, automotive engineers, members of the society --

A Yes.

Q -- distinguished guests?

A Correct.

Q At least in the early sixties, early 1960's, latches of this safety type or anti-burst type were in use in automobiles manufactured here in the United States by a manufacturer such as Ford Motor Company, and the Chrysler

Motor Company, and the Studebaker Company, were they not?

A I am not certain of that, sir.

Q They were in use by General Motors in the early 1960's, were they not, on their passenger cars?

A As I said earlier, I don't know the date, but I know that they were introduced on General Motors passenger cars prior to trucks.

Q What was that last?

A Prior to trucks.

Q Prior to what trucks?

A I don't know, any other truck. I assume this latch is in trucks now.

Q What do you mean you assume it?

A A Ford truck.

Q How about other trucks?

MR. REARDON: Objection, your Honor. What happened subsequently I think has already been discussed here.

THE COURT: It may be up to 1967 the witness is testifying to, I don't know. You may clarify it.

A I -- go ahead.

Q I think you are the one who has to go ahead.

A What is the question now?

Q You said you assumed that these safety anti-burst

latches were in trucks, and I am asking you, do you really say you assume that or do you know?

MR. REARDON: Your Honor, now I am going to object unless counsel fixes a time. I ask that that be done at least.

THE COURT: The last question may go to the witness' credibility. I will allow it on that basis. I would agree also that if there is to be further questioning it is to be confined to the period up to the date of the occurrence here. That is your objection;right, Mr. Reardon?

MR. REARDON: Yes, your Honor.

Q First, if you can answer the question, are you just assuming this or do you actually know it as a fact as an engineer? That question first.

A I think I said that itwas in cars prior to trucks. That is an assumption on my part. I do not know that. And certainly as the date subsequent to the case, I do not know. That date making a separation between whether there are any cars or trucks. I only know that it was introduced in cars of General Motors sometime during the sixties.

Q And the early sixties, can we agree on that?

A I would think it would be before 1965, and I am not certain of that.

Q In the General Motors design of your truck latches do you have available to you the information as to the kind of latches that General Motors uses on its automobiles?

A Yes. I of course can have that any time I seek to have it.

Q We talked about the SAE safety of door latches and --

MR. REARDON: I object to counsel stating --

MR. WALKUP: I withdraw the wording of it.

Q Can you tell me, sir, of your knowledge as an engineer and from your knowledge and experience, prior to the development of the anti-burst latch or the safety type latch used in automobiles, was there a problem generally known to engineers in the automotive industry of doors popping open and ejecting or partially ejecting passengers with a high degree of frequency with relatively nominal forces exerted in collisions with fixed objects or in mounting of curbs or ditches or with rollovers?

A In my opinion that question takes us out of context of the latch in the truck in question. I think the system in that truck was designed for the environment and was a perfectly satisfactory latch. I don't necessarily believe that this latch would have improved the safety

condition of that vehicle at all.

Q I understand that, but could you answer my question and then you can explain it.

A The answer, I guess, would be: Under certain circumstances of design in passenger cars, this latch did assist in keeping the door closed, if that is important to us in this case.

Q Well, I think it may be.

Sir, are you familiar with any studies that the SAE made or any engineering group or body made after the changeover was made in the early sixties from the type of latch that is on this truck to the anti-burst type of latch as to the percentage that door openings and ejections of passengers was decreased by the new type of latch, statistics?

MR. REARDON: I object unless counsel tells us whether he is talking about cars or trucks, your Honor, at this point.

THE COURT: Separate them.

Q First I will ask you as to whether you are familiar with the evaluations of the effectiveness of door locks on the pre- and post-anti-burst lock installation on automobiles.

A I am aware that the SAE committee did work on that, yes. I am not conversant with the percentages.

Q Whether you know the exact percentages or not, do you know that percentagewise when the new type locks were put into general use on automobiles that there was a --

MR. REARDON: I object, your Honor, to counsel testifying in this fashion from some document not in evidence.

THE COURT: Sustained.

Q Are you familiar with the studies done at the Cornell University under contract with the United States Department of Transportation, the National Highway Safety Bureau, as to effectiveness of the old type lock in preventing door openings and ejections of passengers as compared to the new type of lock?

MR. REARDON: Passenger cars?

Q Passenger cars.

A No.

Q Are you familiar with any particular studies made at the University of California at Los Angeles or anywhere else on that subject?

A Old versus new on passenger cars?

Q Right.

A I am not.

Q But you do know from your general knowledge, I think you have already told us, that there was a decrease

in the amount of ejections of passengers as a result of doors opening in accidents after the new anti-burst type latch was put into general use in automobiles; is that correct?

MR. REARDON: I object, your Honor. It paraphrases the witness' testimony, which I don't believe to be accurate.

Q Let me ask you: Did you make such a statement in substance and effect, so I won't be misquoting you?

A I think that is a matter of record, and I guess I don't remember exactly what I said.

Q I guess it is a matter of record.

MR. REARDON: I would be happy to have it reread, your Honor.

MR. WALKUP: There is a transcript.

THE COURT: It may be reread if you want it.

MR. REARDON: Glad to.

MR. WALKUP: Not at this time, your Honor.

THE COURT: All right, go ahead.

MR. WALKUP: I will proceed to some other point here.

Q Let me go back for a moment to the testing of the prototype and the Belgian blocks. That is done at the outset with the prototype vehicle, and then it is not done

again until thre is some new change in the chassis; correct?

A Yes, generally that is correct.

Q So that, in other words, each chassis that is developed out there is not taken out and run over the blocks, it is the prototype?

A Each chassis that is developed --

Q Let me make it real simple if I may. Say I buy a Cadillac automobile. When that first came out, that particular model, a prototype was run over the Belgian blocks and through the dips and gulleys and uphill and downhill; right?

A Correct.

Q But then do you take each car that is made before it or each -- all right, I will limit it to trucks -- do you take each truck that is made before it gets out into the stream of commerce and run it through all the dips and gulleys and over the blocks?

A We do not.

Q And the test that you give the prototype, is this actual type of confiuration right here with the wide duals in the rear and the tilt cab and with some kind of weight on the back to simulate it has a heavy body on it; right?

A Right.

Q And all these Belgian blocks you say are 3 to 4 inches high and they are set irregularly so as to simulate a bumpy road.

A Correct.

Q Then the other type that you put the prototype through is to go in and out of the ditch that you have described which runs at a 45-degree angle so as to put torsional and twisting forces on the rig; correct?

A Those are two of the tests that the vehicle is subjected to, yes.

Q And all of these tests that you give to this vehicle are to test this particular vehicle that you are going to then send to the next step in the manufacturing process; correct?

A Correct.

Q In other words, it is the final thing that you are making there at Pontiac that you are testing, to see how it operates as a put-together unit; right?

A That is correct.

Q And that is in accordance with sound engineering and manufacturing policies, is it not, when you get a vehicle put together to test it under actual conditions to see how it works as to stability and ability to negotiate ditches and curbs, etc.?

A Correct.

Q Just so that there will be no misunderstanding, you at no time ever tested the prototype of the vehicle that actually had the accident in this case with the super-balloon tires, singles, set in the manner that they were, front and rear, with the big heavy boom arrangement on the back of it; correct?

A That is correct.

Q And General Motors did not design any tests for that particular type of configurationof tires and axles that I am talking about.

A We did not design any particular test.

Q So just how that particular vehicle, when it was finally put together in stages, would have negotiated your Belgian block test and your dip and gulley test and the other tests that you give it, you cannot tell us; right?

A I can only give you an opinion, yes.

Q And any opinion that you would give on that would have to take into consideration, would it not, the basic stability of that vehicle as to how it could get up and down over curbs and in and out of gulleys?

A My opinion would have to -- ask the question again, sir, I didn't understand it.

Q Yes, I will ask it. Let me ask you: You would

take into consideration any factors of major change in giving your opinion when the completed vehicle involved in this case could safely negotiate all that testing ground apparatus, right?

A Certainly. That would be the change that I would evaluate, yes.

Q So if you had to evaluate, for instance, the front wheels being wider than the rear wheels, and singles on the rear instead of doubles, and with your engineering art you have already told us that would in your opinion affect the stability of the vehicle--right?

A I believe what I said is that if the rears were narrower--with singles than with the duals, then it is an engineering fact that the footprint of the vehicle on the ground would be less than with the duals, thus it would have less stability with the same center of gravity.

Q Right. And if those tires raised the center of gravity,that would to you as an engineer tell you that the stability of the finished vehicle might be less, is that correct?

A Sir, I would only want to be certain that we understand what stability meant.

Q Swaying, topheaviness, propensities.

A May I suggest that its propensity to turn over

would be increased; as the center of gravity goes up and the footprint on the ground becomes narrower, it would have a greater roll-over moment.

Q You explain that very clearly. A greater roll-over moment. Tell us what you mean by that in lay language.

A I could demonstrate it.

Q Fine.

A If this were the wheel base of the--

Q Pardon me, let me move this truck out of the way.

A If this were outside of the tires of the vehicle and this piece has a center of gravity about here, someplace, as you would try to push it against something and cause it--well, just to skid on the ground, it would try to roll over and it would not roll over until the center of gravity got outside of the wheel. If you were to put it on that edge and show that as the distance went outside of the wheels, the center of gravity, whereever it might be, being higher as the point at which you can think of the force being concentrated to, as you slide it along, is is trying to tip over then, and it will tip over once that center of gravity gets outside of that wheel. The farther you can spread the wheel, the less roll-over capability you will have, the lower the center of gravity, the less roll-over capability you will have.

For instance, a race car.

THE COURT: We will take an hour luncheon recess and resume at two o'clock.

(Recess taken at 12:50 p.m.)

AFTERNOON SESSION

2:00 p.m.

(Jury present.)

D E W A N E F O R E S T E R, resumed.

THE COURT: You may continue.

CROSS EXAMINATION CONTINUED

BY MR. WALKUP:

Q Mr. Forester, with reference to the testing procedures of General Motors, each time you get a new truck chassis in your division or a substantial modification of a preexisting type chassis, then it will go through the proving ground tests that you have described, correct?

A Correct.

Q Now, does General Motors occasionally build a special order vehicle at the General Motors plant in the trucking department?

A Yes.

Q And when you get such a special order for some vehicle that is not in your standard catalogue, say, and y ou complete that special order vehicle, if you do it at General Motors, is it your practice then, similar to testing the prototype the first time, to test the special order vehicle?

A That would be a matter of judgment on the part

of the engineering organization as to whether the modifications to the so-called standard catalogue type of vehicle would have such a magnitude that testing would be feasible and judicial--what word do I want? --beneficial to us.

Q All right. If you had a very substantial modification from any vehicle chassis that you had previously put through the testing grounds, then I take it that good engineering practice would be to give that new vehicle a workout or test to see how it would perform, correct?

A That would be good engineering practice, yes.

Q All right. Now, just a couple of questions about the attachment, of the title cab, and I understand when you were asked about Mr. Severy's description you said it might be a difference in terminology or it might be a misunderstanding on his part on how it works, is that correct?

A That's correct.

Q And he referred, according to the question asked you, to the title cab being attached at the hat section, correct?

A That's my understanding, yes.

Q You know what this looks like from there, so you probably don't have to come down here. But there is a hat section which is right up close to the point where the title cab does attach to the brackets that attach to the frame,

correct?

A I believe that the first cross member rearward from the front of the frame would be a hat section design.

Q All right. And approximately how far in inches are we talking about between that hat section and the place where the bracket is attached to the frame to which the title cab is attached?

A It is my estimation that would be six to eight inches.

Q So you're talking about a distance of six to eight inches, whether it is attached to the hat frame or to the frame itself, which in turn--or to the bracket, which in itself is attached to the frame, right.

A If I may, sir, we are getting--you're getting confused, I believe, on semantics.

The cross member, those pieces that go between the side rails, are called cross members, and they are of hat section type.

Q I understand. You made it very clear. It looks like a hat because you cut through it and it has a brim and a lid.

A Very good.

Q Okay. And there is one up here right up close to the front where this is mounted that if I cut it through

it would look like a hat?

A Correct.

Q And about six to eight inches from there you say t the title cab is attached to the frame with some special brackets that are attached to the frame?

A Yes. And they are attached to what I call the side members of the frame.

Q I understand. All right.

Then with reference to that, and I know that you do use precise language; that's your engineering background, correct?

A That's my good upbringing.

Q Okay. Well, when you--

MR. SCHWAB: I think all the attorneys in the courthouse have now been slurred, your Honor.

A Far be it from me to do that.

Q What I'm leading up to is something, I hope. You say that by this three-point milk stool analogy type of attachment we try to avoid the cab twisting. I take it when you say "we try to" you're conceding that you aren't 100% successful, right?

A I think, sir, that anytime you have a structure, and if you were to continue to twist the frame unduly to the point of something being permanently deformed, you would get

some twist into the cab. There is a possibility that would happen.

Q All right. And then again getting back to your good upbringing or good engineering training, when you said that the distortion of the cab is minimized, I take it by that you're telling us in another way the same thing, that it is cut down, but I take it also minimized means it is not completely eliminated.

A That's correct. I meant by minimized that if you had a different mounting system, such as four points with a wide spread between the mountings, it would be maximized. And as you come towards the center you minimize that twist input.

Q And if you took another cab and you put it on this frame, I'm asking you to assume that it is actually attached to the frame rather than this milk stool type of mounting, then, as this frame would twist and controt in variations, that the vehicle goes through, that would also exert tortion forces upon another type of cab that might be mounted right behind the title cab, right?

A Yes. Twisting the frame would be transmitted into the cab, the twist that exists between the points of mounting.

Q And if you assume just hypothetically that that

cab behind the front cab is part of the structure physically attached to the frame and it is not any milk stool type of attachment but it is actually attached, following out your logic, that cab that was physically attached to the frame would be even more subject to tortional forces than themilk stool type of attachment, would it not?

A With the understanding that where the mounts are located on the frame has something to do with the tortional inputs going into whatever is mounted to it.

Q Could you elucidate?

A Pardon?

Q Could you elucidate.

A If you were to take a frame from one end to the other and take hold of the frame and start twisting the frame, it takes so many foot pounds of force to twist it, it has a tortional rate that is designed into the frame, and the frame will then displace tortionally, there will be an angular displacement along the frame, depending on the amount of force, of torque that is put into the frame. And wherever anything his mounted to that frame a long its length will receive a tortional input depending upon the distance between the mountings and how much the frame did tortionally displace due to the tortional input.

So, if there was a cab, and I understand there was

a cab, mounted behind that cab, it would receive an input dependent upon how much the frame were to be displaced across its points of mounting and how they were mounted.

So if you were to twist the frame again there, sir, you can kind of visualize how much would be put into this cab, and I think you will see that the--visualizing from end to end, in the center, about where that cab would be mounted, there is a minimal amount of twist in the frame.

MR. REARDON: That cab meaning what cab?

THE WITNESS: The cab mounted behind the title cab. I think you could demonstrate that yourself if you were to twist.

Q All right. I will come back to that subject in a moment.

I want to talk just a little more at this point about the latch. I understand that the prototype of the 7500 series came along in about 1960, correct?

A It started production about 1960.

Q But the prototype of the latch that was part of the door, that was taken from the preexisting latch that had been in use long before 1960, right?

A I don't know how far before, but it was before 1960.

Q I think you told us, if I made my notes correctly,

that from at least 1956 on the type of latch that was in this door had been in use at General Motors. Am I correct on that?

A That could be correct.

Q All right. And in that design that you had, you told us and showed us the importance of the points where the little devides are set that help to make the door come in compactly and in its proper place, those plates, the top and down at the bottom, right?

A Correct.

Q And you told us that it is a better design to have them further back toward where the locking mechanism is than up in front, right?

A Correct.

Q And one of the reasons it is better to get them as close as possible to where the latch is , in geographical proximity, is to make it sort of an integrated system, is it not?

A Correct.

Q And the further that they are, by the same token, away from the lock geographically, the more chances there is for torsion and twisting to unseat the lock, correct?

A No, I would agree with that.

Q Well, the principle of the anti-burst latch that

you told us about is that this piece of metal here that comes out with the nozzle on the end of it is actually locked right into the system itself rather than geographically removed from it, right (indicating)?

A Yes, that is self-contained. I think I did say that.

Q Yes. Now, this particular piece of metal sticking out here with the steel knob on the end of it, if you have a vehicle that has the integrated system of this type, that's what you see sticking out on the side of your door where your door closes, right?

A That is usually in the door, I believe, yes.

Q Yes. Okay.

Now, one thing that I want to ask you based on your experience is, these trucks are mass produced, of course, in some number, does every latch and every striker plate on every truck of this series actually line up exactly identical when it is in a closed position?

A I guess I would answer that, sir, by saying any structure which has tolerance in it has some kind of a band of tolerance acceptability, described as a bell curve. It is a statistical type of analysis of structures, would answer your question. And I don't know the exact span of that bell curve, but the doors are adjusted to the opening

and it would be a matter of our inspection process, watching to see that we maintain what is considered to be a satisfactory spread on that bell curve of adjustment.

Q So you might get two latches, say one off the left door of the truck and one off the right door of the truck, that had been in use a couple of years, and if you took them out and analyzed them you might see a little bit different where pattern on the striker and the connecting part on the right door as opposed to the left door, correct?

A I guess that would be my opinion that you would see very little difference between the two. You would have to have a very discerning eye to see a difference.

Q All right. Now, as I understand certain of the principles you expressed, one opinion you expressed was that this latch system as designed was entirely satisfactory for the use applied, correct?

A That's definitely correct.

Q All right. Now, I am going to ask you to take the other side of the coin for just a moment and I'm going to ask you to assume that the door popped open from a nominal force applied to the door and latch. Then, if a nominal force did cause it to pop open, then you wuld say it was not satisfactory, correct?

A I'm not certain I understand the question. If a

nominal force could--and I would emphasize that word--force it open, then something had to be wrong with the system.

Q Okay.

A Is that what you were asking?

Q Yes.

A I can't imagine what it would be at the moment.

Q I see. Now, we talked about nominal forces. Dealing with a truck of this magnitude, in your design of it and in your trying to make it roadworthy and safe and so forth, you do contemplate that this truck will be used under various conditions of roadway surface condition, is that right?

A Yes.

Q That's one reason you do these tests on the prototype.

A On the proving grounds, with the variety of roads.

Q They go over different kinds of bumps in their normal operation over a period of time. I'm sure you take into consideration that trucks in the east will operate sometimes in snow and ice conditions.

A Certainly.

Q Weather conditions.

A Yes.

Q Slippery pavement, right?

A Correct.

Q And in the normal use of a vehicle of this kind by a trucking company I suppose you contemplate that occasionally they may get in a collision with another vehicle and have forces exerted on various parts of the system, right?

A It certainly is a matter of logic that the vehicle is apt to be in a collision. Yes, we try to contemplate as best we can what can be done.

Q And that the vehicle may sometimes go out of control under some conditions of roadway surface or driver failure or miscalculation, right?

A So that you and I don't misunderstand each other , I don't think that--certainly we worry about the crashworthiness of the vehicle. But I don't think that we can possibly contemplate all of the ramifications of what might be implied by a vehicle going out of control. Y ou can go over a cliff.

Q Right. I am not talking about going over a cliff. I am talking about things that you as truck manufacturers can reasonably contemplate that occasionally a big truck of this kind may run over a large boulder in the road, let's say, right?

A Correct.

Q Or may run up over a substantial curb, eight or nine inches high, in the operation of the truck.

A Yes.

Q Or may in a side skid, under adverse conditions, come up against some fixed object, such as a highway median or a curb or a block in the road, something of that kind, right?

A Now I think you're getting to the point of where we can't contemplate the forces that are going to be generated and account for them in the design of the vehicle.

Q Well, what I'm getting at is this:

You don't just assume that this truck that you sell is going to under all conditions be driven right down a straight highway with everything going for it one hundred percent weather-wise, road-wise, surface-wise, etc., do you?

A You're correct.

Q It is going to be subjected to the normal things that the normal driver of the vehicle may encounter in using the vehicle for the intended purpose.

A Yes, sir.

Q Now, as I understand this in summary, and correct me if I misstate this, you have expressed opinions in two alternative forms, one that the door, in your opinion, came open because of some forces exerted by the occupants inside

of the vehicle; that's one alternative, right?

A That's correct.

Q The second alternative in substance is that any latch would fail from the physical forces exerted on this vehicle in this accident; is that in substance the second alternative?

A That's correct.

Q Now, of course, you recognize that there is a third possible alternative, and that would be that the latch itself was of such a design and construction that it failed when it shouldn't have. I know you don't accept that alternative--

MR. REARDON: May he answer it, please?

A I don't accept that alternative.

Q I know that.

A For reasons that I hope I have explained in some detail, that it is a complete latch system that has beenfully tested by General Motors and for that reason I believe that one of the other two alternatives is the one that is correct.

Q All right. I am going to address myself to those remaining two alternatives and the reasons in part which you gave for adopting those two alternatives rather than the first alternative.

Incidentally, sir, how long have you been with

General Motors?

A Since 1952.

Q And your present position with them is?

A Assistant chief engineer of truck design.

Q Now, then, as to the cause of the opening of the door, your alternative number one, due to the action of the occupants in the cab being thrown around, and one may have possibly opened the door--let me ask you first, are you an accident reconstruction expert?

A No, I am not.

Q Have you, yourself, engaged in studies and actually staged crashes of vehicles, roll overs of vehicles, with instrumentations and cameras to see what happens to occupants in such an event?

A Under my direction there have been tests on the General Motors proving grounds.

Q Were these tests in connection with the safety of the vehicle or in connection with litigated matters or what?

A No litigation involved, just crash testing a vehicle.

Q All right. Now, as to whether or not one of the occupants of the front seat of this cab opened that door either on purpose or inadvertently, so far as you're concerned,

pure, unadulterated speculation, is it not?

A I think I stated that as being an honest engineering opinion of what could happen due to the forces involved. It is more than speculation, in my mind. It may be speculation in yours.

Q It is speculation as to whether it did happen or not. You say it could happen, right?

A I am saying that the people that were inside the vehicle, unless they were restrained in some way, in my engineering opinion did move about the interior of the vehicle. They could then have hit the door latch. That is the speculation I think you speak of.

Q All right.

The speculation is that they could have hit the door latch.

A Yes. There is no speculation on my part that they did move about, not in my mind.

Q Did you take into consideration the fact that of the three occupants of the front seat one was holding onto the steering wheel, the driver, the second was restrained by a lap belt and also put his hands on the dashboard to restrain himself, and that the third one put his two hands on the dashboard and also was physically restrained by the middle passenger, who was in a seat lap belt reaching out and

grabbing him by his clothes here and holding him while the truck was tipping over?

A I can read that, yes.

Q All right.

If one of the front passengers opened that door, are you contemplating that he opened it with his hand, his foot, his leg or what?

A It could be any one of those: His elbow, his hand, his shoulder, his knee; his hip.

Q And is this particular type of latch system that there was on the door of this truck one such as the Exhibit number 76, where you can lock that door by pushing the button down (indicating)?

A No, As we stated before, it was locked by pushing the handle forward, inside handle forward.

Q Well, if you had one where you locked it, as many of us see in our cars, by pushing down this button (indicating), then if you're thrown against the inside door latch with your elbow or your buttocks or your leg or whatever, will that unlock the latch of the type of Plaintiff's Exhibit 76?

MR. REARDON: I object, your Honor. There is no claim here by the plaintiffs of any inadvertent door opening by the plaintiff David Lane. I think counsel will concede

that to be so? I think that would only be--we are now getting into the area of something relevant to that.

I certainly acknowlege the witness has given his opinion as an alternative, but I think counsel is now leading into an area which he almost has abandoned during the course of the pretrial of the case as a cause of the accident.

THE COURT: As I understand it, he is questioning the witness with respect to an opinion that he expressed, as I understand it, that some movement by one of the occupants in the front seat in one way or another released the latch system.

MR. REARDON: Thank you, your Honor.

THE WITNESS: That's correct.

THE COURT: Does that mean that somebody struck the handle of the control and released the lock system?

THE WITNESS: That's correct.

THE COURT: That's one of your opinions?

THE WITNESS: That's correct.

MR. REARDON: That's it.

THE COURT: I am not going to question that.

MR. REARDON: I am not objecting to that, your Honor. But I do want the point made clear at some point that there is no claim in the case that the latch system on this

vehicle was defective by reason of the fact that it permitted inadvertent door opening. That is not a crime of the plaintiffs here.

MR. WALKUP: I don't believe that is true, your Honor.

MR. REARDON: I will demonstrate it in documentary fashion if need be, your Honor.

MR. WALKUP: Our claim is directed to the entire latch system--

THE COURT: In the witness' testimony and the expression of opinions that he gave I will allow this line of questioning.

BY MR. WALKUP:

Q I believe the pending question was, sir, if that latch had a button-latch type of arrangement such as shown here in Plaintiff's Exhibit 76, it would be much more difficult to open the locked door, assuming it was locked, by hitting the latch than in the type that was involved in the truck in question, right?

A By hitting the door handle. It is my understanding that with that button-latch the movement of the door handle will not unlatch that particular door closure mechanism.

Q No. 76.

A The one silver-colored sitting on the desk.

Q Right. I am just calling it 76 for the record.

But with the type that was in this truck, if one of the men working in the truck happened to be thrown against that handle in the right manner, you are saying that he could open even the locked door if he hit that handle right; is that correct?

MR. REARDON: I don't want to reargue this, but I would like to show your Honor that in the transcript of this gentleman's deposition where the very question was put as to what the claim of the plaintiff was in this regard relating to the placement of the interior door handle. If I could refer counsel to page 100 in Mr. Forester's deposition. May I show this to your Honor?

THE COURT: Surely.

Proceed.

Q Again, and referring to your opinion that some occupant of the car opened this or possibly could have opened it, more precisely: If the man sitting next to the door had both hands on the dashboard, he obviously, if that is true, didn't have a third hand to reach over and do it with his hand; right?

A Correct.

Q So then we are getting down to the possibility that he opened it with some other part of his anatomy than his hands; right?

A I believe that the deceleration that was involved when the vehicle hit the curb was high enough that a person could not restrain himself by hands on the dashboard, and his hands didn't necessarily remain there.

Q Again, you are in the realm of theory now, and of course we all know you were not there to see what the witnesses felt or experienced themselves. Right?

A Correct. I would like to qualify it myself a little more --

Q Certainly.

A -- by stating that I am a very good truck driver and have driven trucks many miles other than in my present position. My father was in the trucking business. I am familiar with them and have driven trucks over rough road conditions and have some feel other than just as a layman as to what happens to an occupant inside of a vehicle.

Q I guess probably, then, with that additional explanation, you have opened and closed lots of truck doors in your way; right?

Q And you have opened them lots of times in a normal

manner by pushing the latch of whatever kind inside, and you want to get out and the door opens?

A Certainly.

Q It has a sort of characteristic noise of opening just like the car door that you open by pushing the button or knob and your door comes open; right?

A I would think so, yes.

Q If a door, instead of being opened in that manner that we are all used to just by unlocking it, opens with a loud pop, which is heard by the people sitting right next to the door and the ones sitting between the driver and the door, which is an unusual sound and not likened by them to the normal opening of a door, would that be consistent in your truck-driving experience with the doors that you opened by manually opening the door, the loud pop?

A You are setting up a situation, a thing in my mind, trying to describe the level of a pop, and I would say that what you are describing would be over and above what would be the normal door-opening sounds.

Q And I am asking you to assume that the men who made those observations were men who had ridden in trucks for months and in this particular truck for some months?

A Very good.

Q If instead of somebody, you know, with his

finger or his elbow or his buttocks or something unlatching that locked door, the torsional forces which you have described that can be exerted on the latching system caused it to pop open at or about the time that the vehicle was hitting the curb, such a noise would be consistent with metal on metal of the popping open of that latch, would it not?

A I would think so, yes.

Q And to pop open that latch you have told us has a 1/2 inch engagement between the plate and the rotor or rocker, whatever term you used, and if the distortion were sufficient in this hitting the curb or starting to tip to disengage that 1/2 inch and it then pulled metal upon metal, that would be consistent with a more than usual loud popping noise; right, sir?

A I would think that if there was distortion involved, to the extent that that door was forced open and there was still engagement of the striker and the rotor, that there would be a larger than normal popping noise.

Q Sir, one of the reasons you gave for this particular alternative of your opinion was that most any other latch or any other latch would separate from these forces. I am basically quoting you correctly there?

A That is correct.

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Q Were you aware, sir, that immediately behind this General Motors cab there was a man cab put on there by Pitman Company, which also had a latch on its door, also on the right side of the vehicle, and that after men got in the man cab they closed that door, and were you aware that there were three men of substantially the same size as the front seat passengers, sitting in the back seat with no seat belts on at all that went through the same forces in the rollover or turnover as the three people in the front seat?

A I am aware that there was a cab there with three people in it. I am not certain of the same forces involved in the cab structure, however.

Q But would you not feel as an engineer that the same general forces that you have told us about that would throw people around if they are not restrained would throw the people sitting a few feet back behind this cab in substantially the same directions and in substantially the same manner as the three sitting in the front?

A Very definitely.

Q And they would have a tendency, then, in the back seat, especially if none of them had seat belts and none of them is hanging onto a steeringwheel, to be propelled against the right-hand side of the man cab; right?

MR. REARDON: I object,your Honor, on the same

basis as the transcript that I have shown your Honor. There is no claim of that nature in the case.

THE COURT: Overruled.

Q His Honor says you may answer.

THE COURT: He is testing the credibility of the witness and his expertise.

A Yes. They would be moved about in the same manner and in the same directions as a result of the deceleration of the vehicle.

Q And then I come back to your statement that one basis for your opinion that we are talking about is that most any other latch or any other latch would separate from these forces, and I will ask you to assume that the latch in the back man cab did not separate from these forces, would that in any way temper or qualify or change your opinion?

A No. We are talking about the forces of people in causing -- and the movement of people within the cab go with the first alternative of the fact that they are moving about due to deceleration of the vehicle. The forces involved in the second assumption or alternative are the forces that are developed by nature of the vehicle sliding into the curb and having its load continue to move and severely twist the frame and chassis to the extent that it

was permanently deformed. That would be an additive fact, to be moved on the inside, but it is the deformation that takes place from the extreme high loading of having hit the curb and continued to travel, gouging the curb and twisting the frame and those inputs of forces into the cab, both the GMC cab and the crew cab.

THE COURT: That was your second alternative, was it not?

THE WITNESS: Yes.

THE COURT: Under the kinetic force, kinetic energy?

THE WITNESS: Right.

THE COURT: You say in that circumstance that it would not make any difference what locked or what the latching system was there, that the power and the force was so great that the latching system would give.

THE WITNESS: That kinetic energy was manifested and manifested itself in twisting of the vehicle, and the twist of the vehicle that enters into the structures on the vehicle are such that the GMC cab, in myopinion, does not make too much difference what the lock is, it could have failed; whereas in the other cab it's a different set of forces set in because of the way it's mounted and the fact it is on the nodal point of the chassis, a nodal twist point, and that it is not nearly as long as the other cab; thus the

displacement injected into the crew cab is not as great as the GMC cab. It is a different set of forces. You can't draw a direct analogy of one to the other.

Q Well, at least will you concede that if the back door did not open -- and I am talking about in the back cab -- that apparently no man in the back cab hit it in such a manner as to open it or that it was so constructed that a man hitting it couldn't open it or didn't open it?

MR. REARDON: Objection, your Honor, on the same basis.

THE COURT: I will allow him to answer it.

A Obviously the man did not hit it, although I assumed and said that I thought he was moving about in a manner to have opened the door on the back cab.

Q Now with reference to the alternative that you have discussed about the forces involved in the accident, there again,and not to belittle you at all but just to test the strength of your opinion, you do not hold yourself out as an accident reconstruction expert; correct?

A I do not.

Q As far as the damage which occured to this big power company rig which you have seen in the pictures there, are you prepared to tell us how much of the damage occurred when it hit the first curb with the left wheel and how much

when it hit the first curb with its right front wheel, how much occurred when it hit the back right wheel against the curb and how much of the total damage occurred when the big rig toppled over with the boom on it and hit the ground? Is that in your field of expertise?

A Whether you intend to or not, I feel that you are belittling my ability to analyze these things, and I feel quite capable in this respect. And I think, to answer your question, that the major portion of the damage to the frame did occur when the right rear wheel struck the curb and the mass of the vehicle tried to continue and in the path that it was traveling at the time the rear wheel hit the curb.

Q I am talking about the frame damage.

A That's correct. And the large amount of distortion that took place at that time.

Q Sir, just in conclusion, I would like to know when you were first consulted about the problem of this case and by whom?

A By Mr. Reardon approximately a week before my deposition was taken.

Q And the date of that, December of 1973?

A It sounds approximately correct.

MR. WALKUP: Thank you, sir.

REDIRECT EXAMINATION

BY MR. REARDON:

Q I had been out to Detroit before that, had I not, and talked to you about the deposition?

A Yes.

Q And you knew the case was pending, did you not?

A Yes. And I guess that to be about a week before the deposition. It may have been longer or I doubt if it was less than that.

Q I would like to ask you just a few questions.

First, have you actually taken a truck yourself -- maybe not this one but one like it -- and ridden it into low-level barriers like an 8-inch or a 12-inch curb while you were either driving the cab or a passenger in the cab of the truck?

A I have.

Q Have you experienced the phenomena that take place at various speeds with that kind of a mode of contact?

A I have.

Q Tell the jury what you experience, what you saw, what you felt, what happened to your body, and how -- let me withdraw that.

How often have you done that?

A With this particular type of vehicle?

Q This particular truck.

A This particular truck?

Q Yes.

A Maybe four to six times.

MR. WALKUP: Just for the record, you are referring to this type here (indicating).

A The tilt cab variety that is in question in this case is what I was referring to.

MR. WALKUP: Exhibit A112.

Q Tell us what happens to you when that takes place, what happens to the body?

A As I say, I have driven a number of vehicles, and this vehicle is not too different than others in that respect, that if you are going to approach an 8-inch curb at 3 to 5 miles an hour, and run into it at any angle such that one front wheel engages the curb before the other, you should be very careful and understand that you are going to do that, because you will be pitched quite violently in the vehicle. The vehicle will tip and you will not tip, because you are setting on a seat, and it is apt to hit you on the side of the head, for example. You will be thrown about. And that is at a very slow speed. The faster you do, I would say the more violent the actual movement.

Q Is that true of the passengers more so than the

fellow driving the car?

A I would think the fellow driving has the benefit of hanging onto the steering wheel.

Q And this is an experience you yourself have had, you have actually driven vehicles, trucks in these circumstances?

A Certainly.

Q In those circumstances were you able to control, even holding onto the steering wheel, the movement of your legs and torso and head?

A They cannot be controlled, no.

I described a 5 mile an hour engagement with the curb, and I hope I made it clear that the speed with which you hit that results in varying and increasing accelerations, and the movement and the control that you have -- I am amplifying on your question of can you control your body -- the movement that you would experience would be more violent as the speed was increased.

Q Mr. Walkup asked you a couple of questions about the physical exhibit which is the passenger-type latch system which is Plaintiffs' 76 in evidence. You are familiar, now, with that in passenger cars, are you?

A Yes, I have seen that in passenger cars.

Q Did the passenger cars that you have seen have

a latching system which includes strikers set up on a plane, as we have in this vehicle and as exhibited in Defendant GM 104 in evidence?

A Do passenger cars have that type of system?

Q Right.

A I am not familiar with one.

Q With a passenger car that has one?

A That is correct.

Q You have not seen passenger cars with strikers in the door of recent vintage, have you, sir?

A No.

Q Or back before 1966?

A As a matter of fact, most today have free-standing glass and could not put a striker such as this on the door.

Q In other words, they are what we call hardtop convertible variety vehicles, at least some of them are, which do not have any perpendicular support; the B post that we have referred to does not run from floor to roof of the vehicle. Is that correct?

A That's correct. A very popular body is to have a half post that comes up to the glass line of the vehicle.

Q Isn't it a fact, sir, that the development of the passenger-type latch, Plaintiffs' 66 in evidence, is directly related to the modification of passenger car vehicles,

taking into account the varying designs in the absence of the B post?

A To be perfectly honest, I don't know that those two necessarily went together. I assume that they did, but I think it is important to say the truck does not have that short post, and thus the difference between passenger car and truck is amplified by that point of the half post and the need for the latch that ties the door and the post together.

Q You indicated on two occasions to Mr. Walkup that the forces that were present on the man cab, the cab which was directly behind the cab put on by General Motors, would feel or experience different forces than the forces that went into the cab on the chassis as installed. Am I correct?

A From the twisting of the vehicle.

Q From the twisting of the vehicle.

A That's correct.

Q He was examining you on your second alternative, let's call it, which is basically that the enormous twist that bent this chassis permanently opened that door but didn't open the man cab door. You understood him to be doing that.

A I understood that, yes.

Q Could you come down and show the jury what you mean when you say that the forces and the tortional twisting in the area of the man cab would not be the same as the tortional twisting that was experienced by the can up front?

A May I use this box to try to do that?

Q Yes.

A And I assume that this cab was mounted directly behind the GMC cab.

Q Let's not assume. We have a photograph. We can show it to you so there is no difficulty.

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May I have the color photograph of the truck, please?

Point to the man cab on this vehicle, if you would.

A That portion that I outline with my pen (indicating).

Q That is the compartment in which the three crew members, who were unrestrained, as Mr. Walkup was talking about, sat on that day, is that right?

A I assume that to be so.

Q You were going to show us why the forces on that man cab in the course of this twisting would be different.

A I tried to make the point with Mr. Walkup that as the frame is twisted from one end to the other the distance between the two points along that frame at which something is mounted influences how much twist goes into the body and where it is located on the frame.

Q In other words, the bigger the mounting, --

A The wider the span of the mounting, the more frame displacement or tortion it will see. Looking down the frame as it is twisted, you can see that there is more twist between here and here, for example, than there is from just a short section of the frame, where there is practically no twist.

Picture, for example, if you will, that if you

were to mount a plate on the frame, it is only an inch thick, and twist theframe, the plate doesn't see much twist; it just lays across the frame at that point.

Now, the crew cab is more like a plate than is the GMC cab, and so the twist that went into the crew cab, if you view that box on the frame -- see, as the frame is twisted, how much twist goes into the box? I think you'll find it is very little compared to the twist that goes into the cab from its front mounts or the twist that could go into the cab from the front mounts to the single mount in the rear.

That's the point I started to make.

Q Now, Mr. Walkup indicated there was some kind of noise generated at or about the time the door opened. Do you recall that, some kind of a popping noise?

A Mr. Walkup mentioned that and asked me to comment on what I thought that might be.

Q Now, would there be comparable noise generated in connection with the impact of the vehicle, first in the front on the left, then on the right, then ultimately the smacking of the vehicle into that curb? Would there be noise generated on those occasions?

A I would think there is a definite possibility that a popping noise could be generated from any number of

circumstances that you might want to set up. The first thing that comes to my mind is that, if there were a loose object, like a thermos bottle, or anything in the cab, when it hit the curb it could have caused a popping noise.

Q How about the Polecat jumping off its boom in the course of this maneuver?

A As I say, it can be most --

MR. SCHWAB: I object and I m ove to strike it out if there was an answer, and I don't believe that has been established in evidence yet. We have a picture of the vehicle after the accident, indeed.

THE COURT: I'll sustain the objection on the ground the question is leading.

MR. WALKUP: I have an objection on the ground that there is no evidence that there was a thermos bottle.

MR. REARDON: Will counsel concede there was a trailer on the rear of this vehicle?

MR. WALKUP: That's all right.

Q And will you acknowledge, sir, that the banging of this free moving trailer could have been the cause of this noise?

A Yes.

Could I amplify on that? I feel at loose ends on that. It --

MR. WALKUP: I would like to hear it.

THE COURT: The witness is giving his opinion. He is entitled to explain the basis of it.

You may go ahead.

THE WITNESS: Mr. Walkup said, if this is true and this is true and this is true, would that make a popping noise. The answer is yes.

If this gentleman wants to say something about the pole or this gentleman about the trailer, or if one of these people were to ask me about something else, I believe that a popping noise could occur from any number of reasons when a vehicle is going through the gyrations that I expect that one was.

MR. REARDON: Thank you very much.

MR. SCHWAB: Your Honor, I am not sure if this ispart of my previous cross examination, but Mr. Castellano gave us a ruler at lunch time, and for my purposes, with regard to the chassis and back of the cab --

THE COURT: Nobody is raising any question. Go ahead. If you are trying to encourage an objection --

RECROSS EXAMINATION

BY MR. SCHWAB:

Q Sir, would you scale this out, please, and tell us what on this model the dimension is wheel base to wheel base?

* * *

DAVID LANE AND MARY ANN LANE

V. 71 Civ. 986

GENERAL MOTORS CORPORATION, et. al.

March 12, 1974
10:00 a.m.

- - -

(Trial resumed; jury present.)

THE COURT: Ready?

MR. REARDON: Yes..

V A S S I L I S M O R F O P O U L O S, called as a witness by the defendant General Motors, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. REARDON:

Q Sir, would you tell us, please, with whom you are affiliated?

A I am affiliated with the American Standards Testing Bureau in the capacity of technical director.

Q And where is the American Standards Testing Bureau located?

A The home office of the bureau is located in New York City at 40 Water Street.

Q And can you tell us, please, what your educational background is, sir?

A I have a Master of Science degree in materials

engineering awarded by Purdue University in 1958, a Master of Science, also from Purdue, awared in 1960, and a Doctorate in engineering sciences awarded by Columbia University in 1964.

Q And can you tell us just generally what your professional experience has been following your formal education?

A Prior to associating with the Bureau in 1966, I have taught and conducted research at Purdue University, the City University of New York, and Columbia University.

In the industry I have worked for the U.S. Steel Corporation and the U.S. Atomic Energy Commission.

Q Can you tell us quickly what your professional affiliations are?

A I am an elected member to approximately a dozen engineering societies, among which the American Society of Safety Engineers, the Society of Automotive Engineers, the American Society of Metalurgical Engineers, the American Society for Testing And Materials, the Society of Automotive Engineers, The New York Academy of Sciences and a number of others.

Q Sir, could you tell the Court and jury, please in a relatively speaking way if you could, your experience dealing with materials, including metal, the application of

mechanical systems of various kinds?

A The field of engineering sciences in which--

Q I am having a little trouble hearing you. I don't know if anyone else is.

A In the field of engineering sciences, which is the area of my professional involvement, we are concerned with the application of materials in systems and structures. That is, the engineering sciences field is the applied mechanics of materials and materials engineering.

Every system, or every piece of equipment that we have and we design, has to be constructed by a set of materials that are specifically chosen or selected for that particular use. Once a set of materials has been selected and it has been put together in a system, then we have the interaction of this system and the materials in the system with the types of uses to which we put that equipment.

Now, this in essence is the field of engineering sciences in which I study and get involved in.

Q Could you please tell us what you do at the American Standards Testing Bureau as the technical director?

A As the technical director of the Bureau, in effect I am the chief scientist of the Bureau. In my personal capacity I am in charge of the Materials Engineering and Applied Mechanics Division. In that area we study the design,

the application of materials, the performance of materials, the performance of materials and equipment in all types of uses.

The subject matter of these studies, again, is the evaluation of the designs of materials and mechanical equipment, the performance of such materials and equipment, and the compliance of these systems with applicable standards and safety requirements.

Q Now, this case, as you know, involves a General Motors truck, and I wonder if you could tell us, please, your specific experience with regard to materials as it relates to trucks.

A In the field of trucks and heavy equipment of this type, I have spent a considerable amount of effort and I have studied various systems, such as chassis and bodies of trucks used in over-land roads for the purpose of determining the performance of the chassis on various road abnormalities, both on and off the road, in determining the effect of end use at various speeds upon the integrity of the chassis.

I have done a lot of material and equipment studies on towing by heavy vehicles of various trailers and the effect of the weight on the twisting performance of the chassis of the tractor.

I have conducted a lengthy study for the New York

Fire Department on fire engines and the effect of cornering, jumping the curb around narrow streets upon the equipment, namely the chassis and the cab of long fire engines.

I have conducted numerous studies relating to the effect of roadloads on towing bars or couplers between trailers and tractors.

Q And you moved your hands several times during the course of that explaination of your experience. Are you intending to imply by that what we refer to in this case as torsion or twisting of the chassis of the truck?

A Yes, sir. There are actually two types of loads, or two types of requirements in this kind of a system. One is a vertical loading, which is absorbed or compensated by the suspension system, which is the springs, the shock absorbers and the other parts of the suspension system. Those are vertical loads when the vehicle moves in a forward direction.

And the other type of a load is one of a twisting or torsional scope, and this has to do with the effect upon the vehicle when one side is lower than the other or when a wheel goes into a depression or mounts a curb.

Q You are familiar, I take it, because we provided it to you, with the specifications at least as issued by General Motors relevant to the 7500 series truck which is

involved in this case, is that correct?

A Yes, sir. I have a set of specifications for the GMC series GM 7500 truck.

Q You have seen this model, which is General Motors A112 in evidence, have you not?

A Yes, I have seen the model.

Q And I have also had occasion to show you, in the course of discussing the case with you, General Motors' 104 in evidence, which is a drawing, or a picture at least, of the right front door of the 7500 series truck and the latching system involved in it; you have seen that?

A Yes, sir, I have seen that exhibit.

Q In addition, I have provided you, have I not, with the quotation of the Hendrickson Company relevant to the work which they did after they received this cab and chassis from General Motors, as well as a drawing prepared by Pitman Manufacturing of the body which ultimately went on this vehicle. You have those in your possession?

A Yes, sir. I have the copy of the Hendrickson Manufacturing Company quote dated March 15, 1966 and a copy of the blueprint by Pitman Manufacturing Company pertaining to this equipment, dated April 20th or 21, 1966. I believe the date is a little blurred.

Q Could I have the drawing number, please?

A E-31379.

MR. REARDON: Can we agree that that is the drawing initially provided in this case?

MR. SCHWAB: Yes.

Q Is that drawing a tilt model cab vehicle?

A No, sir. This is a non-tilt cab.

MR. REARDON: Can we agree, counsel, that the drawing in evidence introduced by Mr. Walkup has the tilt-over feature which was provided by counsel for Pitman?

MR. SCHWAB: Yes and no. There are two drawings in evidence, actually. Mr. Walkup introduced, I think, the first one, which was with a conventional cab, and then the second one in evidence is the tilt-over. I believe beyond that they are the same drawing, however.

MR. REARDON: All right; good.

Q I also provided to you, sir, did I not, in connection with your investigation and examination into the matters relating to this case, a copy of the Plaintiffs' interrogatories dated December 3, 1973?

A Yes, sir, you did.

Q Which state in part, "Size of the door locking system with the door latch, handle, etc., should have contained a vertical restraining device and handle-withstood mounting a small center island curbing, which introduced

certain torque and twisting factors."

You have those interrogatories and have you examined them, sir?

A Yes.

Q And you were for portions of the testimony of Mr. Severy, who was called as a witness on behalf of the plaintiff, is that so?

A Yes, sir, I was here.

Q You heard him testify that at the time this vehicle struck the median divider at its right rear on the day of this accident that "nominal forces or a nominal impact" was involved; were you here for that?

A I did.

Q Now, finally, did you undertake, in the course of your investigation, to actually examine a GMC 7500 series vehicle other than the one involved in this accident?

A Yes, sir I did. In fact, I examined a vehicle that is ten serial numbers removed from the accident vehicle. In addition to examining it, I subjected it to a series of tests to demonstrate its performance under twisting or torsional loads.

Q Now, I would like to, based on your examination and knowledge, apart from your testing for the timebeing, pose to you a hypothetical question. It is rather lengthy,

and I apologize for its length, but I have no recourse.

THE COURT: You don't have to apologize for it.

Q Sir, I want you to assume the following facts to be true:

The vehicle in this case, which the jury has seen a picture of and which is in evidence, was delivered to Jersey Central Power and Light in June,1967 after having the chassis modified by Hendrickson to include a Colman front axle and four super single off-road tires.

That after Hendrickson completed its work the chassis had mounted on it a Polecat boom and a body by the Pitman Manufacturing Company, which is reflected at least in part in the drawing which you have seen.

The vehicle was used by Jersey Central after receiving it and after some initial repairs in July of 1967, for approximately two years and seven months on both on and off the road work, and about 60 percent of the time it was used on the road and forty percent off the road.

That during the course of the vehicle's use the right front door never popped open in any fashion.

I want you to assume further that on the morning of this accident, February 4, 1970, the vehicle, which had a Polecat trailer, which was carrying nothing at the time, mounted at the rear of the vehicle, and that the vehicle left

the yard of Jersey Central at about eight o'clock and proceeded over rural roads in New Jersey to U.S. Route 9, being driven by a gentleman by the name of David Burlew, who had never driven the vehicle before or at least had never driven it over icy conditions or over any distance at all.

I want you to assume that the weather that day was very hazardous, the roads were slippery and icy and the wind was blowing in excess of 25 miles an hour;

That the vehicle traveled a distance of about nine miles until it approached on U.S. 9 an intersection and as the vehicle approached the intersection the light at the intersection turned to amber, the driver applied the air brakes of the vehicle and the vehicle was immediately precipitated into a skid under which the driver lost control;

The vehicle proceeded in a counterclockwise fashion, with the trailer following behind;

The vehicle assumed a perpindicular position to the median divider in the road and the left front wheel ofthe vehicle first mounted the divider, which was about eight to ten inches in height, followed by the right front wheel;

The truck continued in this counterclockwise maneuver until the right rear tire of the vehicle struck the median divider;

That at that time the air in the right rear tire

escaped, the truck continued and mounted the divider;

That after the accident the members of the crew observed in the rim of the right rear tire fragments of concrete and the road of the divider itself had been found, the grassy portion, to have been gouged, and the path of the vehicle was a diagonal path, still on a lateral position, across the divider until such time as the vehicle at its front left the divider and entered the southbound lanes of U.S. Route 9, at which time the vehicle tripped over in a slow motion type manner, landing on its right side;

That at some point after the vehicle struck the divider with its right rear tire the right front door of the vehicle came open and a portion of the anatomy of the gentleman sitting adjacent to the right rear door, namely his lower legs and feet, left the vehicle and he was injured as a result of that.

Now, I want you to assume further that the vehicle at the time had a gross vehicle weight of approximately 32,000 pounds, that the trailer weighed between three and four thousand pounds, and that although the trailer had braking mechanism which could have activated by hooking it up before the trip began, that it was not in fact hooked up and that the trailer had no independent braking mechanism at the time of the occurrence.

Assume further, please, that when the vehicle went

into this skid it in fact appeared, at least to the crew, to accelerate, to pick up speed.

Now, based on these facts and based upon these few additional facts, I would like to ask you a question. The additionl facts are these:

That during the course of the examination of Mr. Severy he testified that in accordance with his calculations the kinetic energy of the vehicle alone at the time it was in this counterclockwise mode and at the time it struck the median divider had a kinetic energy of 580,000 foot pounds.

Now, based on these facts do you have an opinion, first--I would like to break this down--with a reasonable degree of engineering certainty, as to whether the tires of that vehicle mounting the divider at the front, first the left front and then the right front would cause that vehicle's right front door to open.

A Yes, sir, I have an opinion.

Q And what is your opinion?

A The mere mounting of a curb of this size would have absolutely no affect on the door of the vehicle, the cab, and I am saying that the mounting of the curb definitely effects the torsional ability of the vehicle at that point.

'12/74 1 1b

Q Could you, with the aid of the model, explain to the jury what you mean, with his Honor's permission?

A Yes, I can.

I would like to have somebody hold the read axle so we can demonstrate this.

MR. REARDON: May the record reflect that I am holding the rear axle down iwth hand pressure.

A When a tractor such as this is loaded with a superstructure, in the process of mounting a curb, the system would, in effect, behave as if the tail of the chassis is firmly loaded down, and what is happening in the front as you mount with, let's say your left front wheel the curb, the chassis would be twisted in this fashion (indicating). In other words, the left front wheel would be raised, and in this process the frame, the rails would be twisted.

Now, this type of twisting load by itself would not have any effect on the right or left, for that matter, side of the cab with respect to the mating of the door and its frame.

The type of twisting forces that are applicable in this case would be severe at the portion of the frame or the chassis close to the axle because this is the area of maximum twist, as you see here (indicating).

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Q Which axle are ycu referring to?

A I am referring to the rear axle, which I described as firmly held down because of the weight on the chassis of the vehicle.

Q Now, does the mounting,the manner in which the cab is mounted on the vehicle, have any relationship to the receipt, or what the cab of the vehicle receives when the chassis receives twisting torsional loads?

A Yes, it does.

Q In what respect?

A In fact, the design of the chassis and the cab mounting system has a direct influence on what happens to the cab.

In this particular instance, this vehicle is designed with three supporting points for the cab, two of them at the forward end of the rails --

Q I would like you to bring this over to the jury. I think they have heard something about this, but I would like them to see what you are pointing to.

A Before I was demonstrating what physically happens to this vehicle when it mounts a curb, beginning with the left front side and then following with the right front side.

In the first instance, as the left front wheel

mounts the curb, you will have a counterclockwise torsional load in this manner (indicating). Once this mounts the curb, then the right one will mount and you will have a clockwise twisting movement (indicating).

Under those circumstances and within the elastic limit of this frame --

Q What do you mean by "the elastic limit of the frame"?

A Any structure of this type constructed of materials, or steel in this particular case, has a very specific load-bearing capacity. Now, within the elastic limits, within that limit of loading, the frame will twist and then, when the tension is released, it will go back to its original condition.

In other words, it behaves elastically, like a resilient material, or rubber, to be illustrative, and regardless of how many times I twist this frame, if I let it go, it will be back in its original position, very simply because I do not deform it, I do not break it.

So within its eleastic limit this torsional loading of the frame would be felt at the front of the cab, which would be the minimal point of torsion, and then the read of the cab, which is actually one point of contact with two shock-absorbing mounts here, and the cab,

as you see, floats on those two mounts; it is not firmly fixed onto the frame. So, in effect, the twist of the chassis is not transmitted, or it is transmitted to a minimal degree to the cab. This is the floating design of a cab as opposed to one that is firmly affixed on those two railings.

Now, in this manner, the torsional loads within the elastic limit which I described would have very little bearing on the stability of the cab, and the design here, this three-point floating design, is intended to cushion and make the cab ride as comfortable as possible so the people occupying it would not be subjected to the bumps on the road or any irregularity on the road surface, whether on regular road or off the road.

Q If you stay right there for a minute, let me ask you this question, taking into account the same facts in the hypothetical.

Would, in your opinion, nominal forces to the chassis frame rails have the effect of popping open that door?

A No, sir. As I indicated before, any force which will be below the deformation or plastic limit of this frame, namely, forces that are not sufficient to physically bend this rail out of shape, this type of force will not

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have any bearing on the integrity of the cab or, for that matter, on the smooth ride of the cab.

Q Now let me ask you this, sir:

I want you to assume one other fact in the hypothetical which I have given you, and that is that after this accident, after the vehicle turned over, the vehicle was brought to the yard of Jersey Central Power & Light and was examined by two gentlemen for the purpose of determining whether the vehicle could be repaired and what it would cost to repair this vehicle, and that in this examination, the determination of these people was that the chassis, the frame rails were something which had to be replaced. They could not be repaired.

Now, taking into account those additional facts as part of the hypothetical, and taking into account, as I have told you, that the door did in fact open, do you have an opinion as to what caused the door to open on this occasion?

A Yes, I do.

Q What is that opinion?

A The type of findings that were reported after the accident indicates that the frame was beyond repair very simply because these rails were twisted completely out of shape.

Now, this means that the vehicle was subjected to gigantic forces during the accident in a manner that the elastic limit of the chassis was exceeded by a large amount.

Now, under those circumstances, the whole system if taxed byond its load-bearing capacity, and under those circumstances both the tractor rails and the cab will be damaged.

Q Does the gouging of the curb and the reflection of concrete in the rim bear any relationship, in your opinion?

A Yes, sir. The set of facts that were propounded to me indicates that the type of impact you had on the right rear wheel was extreme and of gigantic forces. Over half a million foot-pounds of kinetic energy is an extremely high level of forces or would contribute to severe impact damage. The fact that a tire of this size was unseated, or the bead of the tire was unseated, again indicates gigantic forces at impact.

As a result of that impact and the performance of the vehicle that was described before, we know that the torsional loads had to be in excess of the plastic limit of the chassis, and under those circumstances every component of this system was stretched beyond its capacity.

Q Now, staying right where you are, let me just ask you if you could orient for the jury the motion of the truck as it struck the curb at its right rear. I'm not trying to ask you to simulate the road direction and all that, but the mode of the impact.

And then I would like you, as you describe the mode, to explain to the jury, to the extent they exist, the laws of physics as they relate to this impact, taking into account the vehicle that day.

A Well, I would roughly describe the sequence of the reported events by using the rail on my stand here as a curb. And, as I indicated before, the first thing that happened was the left wheel mounting the curb and the vehicle moving counterclockwise (indicating).

After the left one mounted, the right one mounted, and then we had this torsional effect which I described.

And after that, it turned around and the right rear hit the curb at the kinetic energy levels which were described.

In doing so, the tire was unseated and also it gave another very heavy torsional bending force, so that when this mounted the curb (indicating), another heavy twist took place on the chassis and the cab, and as a result of the final mounting you have this gigantic

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twist that completely deformed the system beyond repair.

Q There was reference during Mr. Severy's testimony to the law of inertia. Could you describe what that means, if it applies to this mode of accident?

A Certainly.

Newton's law of inertia simply says that if you impart, or if you apply a force on a stationary object such as the curb, then the body, namely, the truck that hits it, experiences a counter force of the same magnitude.

Typically here we said that the kinetic energy of this vehicle was over half a million foot-pounds. This being the case, because the curb was stationary and the vehicle hit the curb at that high speed, then there is an equal reaction by the stationary object that cannot move that is exerted upon the vehicle, and that reaction is equal to the force that was applied on the stationary body in the first place, namely, over half a million foot-pounds.

This is an extremely high, massive type of force that did all this damage, namely, the unseating of the bead of the tire, the damage to the frame and the cab.

Q Did you, sir, conduct certain tests for the

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purpose of firming your opinion or pursuing your opinion in connection with this case?

A Yes, sir. I performed a series of tests to show how this vehicle, the chassis and the cab, behaves under severe normal loads experienced on and off the road.

Q What do you mean by that?

A The type of loads thatyou will experience by going, let's say, into steep depressions in the road, in a pothole, let's say, which is as deep as a foot. This is a very severe pothole. If you drive into a one-foot pothole you really feel it.

Q Would it simulate the forces going into the chassis as the vehicle mounted the curb, at the front of the vehicle at least?

A Yes. In fact, this was one of the objectives of the test program, to show what happens when the vehicle mounts a curb both under static and dynamic conditions. In addition, the objective of the test was to show what happens when one side of the vehicle sinks into a pothole and then it is raised because the other one goes into a pothole.

So, in effect, the program was designed to simulate extreme road conditions that may be expected when such a vehicle is used, let's say on a normal highway or

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even on very rough off-the-road terrain.

Q In any event, would the maneuvers that the vehicle, the chassis, was put through during the course of this test simulate within its range what could be described and was described by Mr. Severy as nominal forces?

A Yes. We took into consideration what will happen if this vehicle will physically mount a curb as high as 12 inches under normal movement.

Q Could you describe for us the truck that was used and you are aware that the truck that existed in this case, and I would like you to make clear to the Court and the jury precisely what the differences are to the extent you are aware of them.

A The truck that I was provided with, that was procured for this study, had a serial number TM7750AD3222Z. This ia vehicle which, as I indicated before, is ten units, ten serial numbers removed from the actual vehicle, which has an identical number, with the ending 12Z, which is ten units removed, ten vehicles away from the production of my test vehicle.

This was in a condition shown in this model, which is Exhibit A-112, and it was physically outfitted with a cab like that (indicating), it had the same axle

arrangement, dual tires in the rear, and it has been on the road since its manufacture in 1967.

This vehicle, in other words, was not a new vehicle; it was a vehicle that has been used all the time.

Q It did not, I take it, have a Colman front axle, right?

A No, sir. It had the original equipment as described in the specifications for the 7500 series truck.

Q And it did not have super single tires?

A No, sir. It had no heavy-duty equipment. It had the original lighter-duty springs; it had the original frame, the original cab and the original tire system.

Q Would the differences that we have indicated existed in the test vehicle, as opposed to the vehicle in question, have any effect upon conclusions that one could draw in terms of the torsional loading of the chassis and its impact on the cab?

A No, sir. In fact, the vehicle, the test vehicle as loaded and tested, presented a much more severe test for the simple reason that I explained before, namely, that it did not have heavy duty suspension, it did not have heavy duty super tires, and it was, let's say,

in the original design condition, which was not intended for an extremely heavy-duty use.

Q Could you continue to describe the truck as it was tested, sir?

A Yes. The test vehicle was in this condition, as I said, without any superstructure, just the chassis rails. It was loaded with heavy concrete blocks. These were loaded on the portion of the chassis between the cab and the rear axle. The total weight of five large concrete blocks was 24,000 pounds, about 24,000 pounds; to be exact, 23,400 pounds.

This totals with the truck a gross weight of about 33,000 pounds.

Now, the vehicle that was loaded in that fashion was then instrumented. Namely, the door on the right side of the vehicle was outfitted with a number of strain gauges.

Q What are they?

A Strain gauges are electronic components which are designed to measure the amount of stress that is experienced by any solid object, such as the frame of the door or the door proper, such as the steel rails of these chassis. I used 17 strain gauges, of which 6 were located at the rear of the right rail immediately

forward of the rear axle.

The purpose of that was to determine the amount of torsional loads that I experienced when this chassis is twisted.

Then I placed eleven strain gauges about the door and the latch in order to determine the amount of load that the door experiences when the cab is on a chassis that is twisted in the severe manner that I will describe.

Q Now, did you prepare a drawing of the site at which you mounted the strain gauges on the door?

A Yes, sir. I have a drawing of both the strain gauge locations on the door and the chassis rail that I described.

Q Could you describe to the jury--maybe the better way would be if you simply mark with a red "X" as close as you can on GM 104 the points at which you mounted the strain gauges on the door.

A Certainly. I will use the same locations as I did on the test, and I am marking number 7, a strain gauge located immediately to the left side of the upper striker (marking).

The second strain gauge, number 8, was located right at the corner of the door (marking).

Number 9 was mounted on the side of the window. Number 10 was mounted immediately above the door latch.

Number 11 was mounted on the door latch, number 12 immediately below the door latch, number 13 forward of the lower striker on the door, number 14 about the midspan of the lower portion of the door, and 15 and 16 at the lower portion of the door (marking).

And then number 17 was mounted on the lock striker, which is right here (marking). This is the portion of the frame onto which the door latch engages.

THE COURT: When did you conduct this test?

THE WITNESS: Your Honor, this test was conducted in February of this year. The date was--the dates were February 5th and 6th of this year.

Q And at the time you were retained I sent you a copy of the interrogatories that I have already mentioned, is that right, sir?

A Yes. In fact, the design of this program was in part addressed to those interrogatories, in fact.

Q And the statements with respect to vertical forces and the twisting of the cab and chassis as stated in those interrogatories?

A That's correct. And all these strain gauging locations were specifically intended to determine what the vertical forces the door experiences at the top, what other forces or result it may experience on the side, the force

field about the door latch and striker, and then the vertical forces at the lower section of the door.

Q After the strain gauges were in place as indicated on GM 104, what did you do to the vehicle?

A The vehicle was tested--well, as I said, the vehicle was instrumented and loaded, and after that point I physically caused it to be raised on the left front side (indicating).

Q Is that what you call a static test?

A That's correct.

Q What does static mean?

A Static means that the vehicle is at rest, it is not moving.

Q Show the jury what you did with the vehicle, would you?

A Right. As I said, this vehicle now is loaded with almost 24,000 pounds, and the front of the vehicle is lifted with hydraulic jacks on the side so as to raise the cab twelve inches from the door (indicating).

Q Now, you said you did a dynamic test. Will you tell the jury how you did that and how it affected the vehicle?

A The loading and the instrumentation of the door which I described before was not changed, it was identical.

The vehicle was put on a dynamometer. A dynamometer is a piece of equipment which is designed to drive the wheels in a manner identical to what happens on the road, and this particular dynamometer is specifically designed not only to drive the wheels but to bounce them up and down in this manner(indicating).

By doing so we have a dynamic test of the twisting of the vehicle because it goes down on one side and up on the other at the speed of the test, which can be anything between 20 and 50 miles an hour. And at the speed of the test you have a continuous flexing of the vehicle at the front.

Q And in the course of this dynamic test were the strain gauges in place at the time?

A The strain gauges were in place and the vehicle was photographed and movies were taken of the vehicle both in the case of the static test and the dynamic test, to show how these forces at speed of 25 miles an hour would affect the vehicle and what will be the corresponding loads or stresses, torsional stresses, experienced immediately forward of the rear axle and all around the door.

Q And will you tell us, please, what your findings were in that respect?

A The maximum stress, the maximum load that was

experienced by the rail under dynamic conditions was 8,000 pounds. The maximum stress experienced by the vehicle in a static test, namely with the vehicle at rest--

Q That is just lifting one wheel?

A That's correct, lifting the left front side of the pavement by twelve inches.

The maximum force that was experienced by the chassis rail immediately forward of the rear axle was 6,600 pounds.

Q Now, is that the point that you told us before wuld be the point of maximum twist or torsion?

A That's correction. As this vehicle is twisted either clockwise, or counter clockwise, the maximum forces would be experienced at the chassis rails immediately forward of the rear axle, which as I indicated to you before is more or less firmly held on to the ground because of the super-structure.

Q All right. Would you tell us what your findings were with respect to the dynamic?

A All right, in the dynamic test we have higher torsional forces as I indicated of 8,000 pounds compared to a maximum of 6,600 pounds, and this is the maximum stress that is experienced by this vehicle throughout.

The maximum stress around the door under static

conditions, namely the vehicle not moving but simply raised, was only 300 pounds, and the location of this maximum 300 pounds load was the upper striker, where the door is restrained by the frame.

Under dynamic conditions the maximum load which was observed was 2,000 pounds, and it is again in that area of the cab door which is restrained by the frame.

Q Now, as a result of the testing that you did and your knowledge of the truck, did you reach any conclusion or opinion as to whether or not the nominal to severe forces that this testing put this truck chassis through would have had the effect of popping that door open under road conditions?

A Yes, sir, I did.

Q And what was the opinion and conclusion that you reached?

A The type of forces involved here are actually incapable of popping that door open. In fact, the door sees very little loading, or experiences very little forces, very insignificant forces, and moreover, the chassis rails experience a maximum of 8,000 pounds, which is well below the plastic limit or the point where they will deform.

So under those extreme conditions of static and dynamic testing we saw that, number one, this cab floats on the chassis, and secondly, the chassis itself would be

perfectly capable of taking a twisting over twelve inches of torsional displacement.

Q Both standing still and also moving?

A At 25 miles an hour.

Q And did you relate the results of this testing that you did to the opinion that you have given the jury previously, namely that the popping of the door, the opening of the door on this day, was occasioned by this half a million pounds of kinetic energy?

A Absolutely.

Q Did you relate the two for the benefit of the Court and jury.

A Again, the severe loading of this vehicle would not produce any forces close to its plastic limit. However, when you do have this massive, gigantic impact because of the over half-million pounds of force, then you do exceed the plastic limit of the frame and you physically deform the entire vehicle beyond its elastic limit, namely to the point that it is physically twisted out of shape.

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Q In connection with the movement of this vehicle, sir, you are aware that there was a trailer at the rear of the vehicle.

A Yes, I am.

Q Does that have any significance to you in terms of the forces and the mode of the happening of this accidention and the energies that went into the deformation that you have been told was in the frame after someone examined it after the accident?

A Yes, it would. In fact, the uncontrollable speed of something attached to the rear of this chassis will have an additional very severe effect on the impact force application which I described before, because something like a trailer at the tail of this chassis would tend to accentuate the type of impact forces that you would get by whiplashing of the tail of this vehicle up against a curb.

And the 4,000 pounds, or 2 tons, of this trailer attachment would have severely aggravated the loads on the chassis, which were sufficient to bend it.

Q Let me show you this photograph, which is A-26, GM A-26 for identification. It shows the rear of the truck (handing). I point out to you --

Let me first offer it in evidence.

There is another copy that Mr. Schwab has put in.

MR. SCHWAB: I'm not sure of the purpose for which the photograph is being offered, your Honor, and that might have a bearing on whether I would object to it.

MR. REARDON: Let me not bother. Let me use the one that is in evidence.

MR. SCHWAB: All right (handing).

MR. REARDON: The photograph of the pintle hook at the rear of the truck, right?

MR. SCHWAB: Yes. It has been so identified.

MR. REARDON: By Mr. Quixley as being bent in this position after the accident.

MR. SCHWAB: I'm now testifying for Mr. Reardon, but that is a correct statement, I agree.

Q Now, does that bent pintle hook, which is -- can you describe what that would be made of, as best you can, from looking at that photograph?

A Yes, sir. This is a forging that is of a substantial cross section. In fact, it is a hook of this type that normally would have an ultimate strength of about 140 to 150 thousand pounds per square inche.

Q Does the bend in that hook have any significance to you in terms of the forces that that trailer was putting

into the situation at the time it rotated with the truck prior to the impact of that right rear tire?

A Yes, sir. Again here, the manifestation of bending of that hook indicates that the trailer itself, apart from the kinetic energy of the parent vehicle, the trailer itself has a substantial amount of kinetic energy which, during the impact, was transmitted to the only point of attachment with the truck, and that was sufficient to bend this extremely heavy hook out of shape and was sufficient to damage it beyond its plastic limit.

Q Now, you indicated that you took a motion picture of the dynamic testing or the static testing or perhpas both.

Is that contained within what has been marked as General Motors A-82 for identification?

A Yes.

Q And did you take photographs of the testing that you did? And I'm showing you this folder which is marked General Motors A-81 for identification and ask you if they are the photographs?

A Those are 14 photographs, black and white, which I took at the time the vehicle was loaded and tested in a static manner.

MR. REARDON: I am going to offer them in

evidence, your Honor. They have been previously marked and identified in the exhibit list.

MR. WALKUP: No objection.

MR. SCHWAB: I am sure they are not being offered against me, but may I see them?

MR. REARDON: Yes.

May I suggest this, your Honor? By all means counsel may see them. I'll withdraw the offer at this point.

THE COURT: He may make up his mind now.

MR. REARDON: Okay.

(Pause.)

MR. REARDON: Mr. Schwab would like me to make it clear that I am not offering it against him.

THE COURT: You do make it clear.

MR. REARDON: I make that clear.

THE COURT: They will be received.

MR. SCHWAB: Then I have no objection.

(Defendant General Motors'Exhibit A-81 for identification received in evidence.)

Q Sir, I am showing you three photographs which are part of General Motors' 81 in evidence. Do these three photographs show the loading of the vehicle in question in a static position with the concrete blocks

you have told us about?

A The first photograph shows the vehicle fully loaded and instrumented as I have described. The second one --

Q What is the plate number on that?

A This is the plate indicated as 38402.

The second one is a view of the rear of the cab of the loaded and instrumented vehicle under static test conditions when the left side has been lifted off the ground. The plate number is 38414.

And the third photograph is actually the vehicle loaded and instrumented on the dynamometer immediately prior to the dynamic test.

Q Let me show you the following photographs, part of GM 8, and ask you if these show the instrumentations of the right front door of that cab.

A Yes, they do. Specifically, Plate No. 38408 shows the strain gauges attached to the door latch.

Plate No. 38410 shows an overall view of the strain gauges attached to the door latch and the adjoining area.

Plate No. 38411 shows the door fully instrumented, closed, and with a series of tapes of masking tape strips that were placed on the crack of the door to show any

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movement, visually determine any movement of the door during the test.

Q In other words, you put a piece of adhesive tape across the door so that it would be in place on the door and also on the sheet metal adjacent to the door; is that right?

A That is correct. Across the crack of the door and the door frame (indicating), to show the position of the door before the test and during the test.

Now, the fourth plate is No. 38413, and this shows the closed door fully instrumented during the static test when the left side was lifted, and showing the infinitesmal amount of movement of the door with respect to the frame and the corresponding slight movement of the tape that was placed across.

MR. REARDON: May I show these to the jury, your Honor?

THE COURT: Yes.

(Pause.)

(Defendant General Motors' Exhibits A-116 through and including A-122 marked for identification.)

MR. REARDON: I didn't identify those yet, sir, but I will.

Q Before I move on to these other photographs,

sir, these strain gauges that you referred to and their application to a situation such as this, is this something that is used in various applications?

A Yes, sir. As I indicated before, I have conducted many studies relating to the effect of loading on vehicles of this type. In particular, the most extensive of this kind was with the New York Fire Department engines, and there the objective was to find out how the chassis is loaded when the engines go out at high speed around narrow curbs.

Q Apart from what you have done -- and excuse me for interrupting -- are they used by industry generally to gauge matters relating to torsion and things of that character?

A Yes, sir. This is the only way that you can physically measure the amount of stresses that you have in a structure of this type. There is no other way that you can measure them quantitively. I mean you can look at something and say it is bent or it is twisted, but you will not know what kind of forces went into the structure, into the metal that physically generated a certain amount of displacement or twist.

MR. REARDON: Now, Mr. Walkup, I think you conceded the other day Mr.Severy made these purple markings

with a grease pencil on --

MR. WALKUP: The record reflects what he made. I'll concede it. The jury heard it.

MR. REARDON: I am just asking you --

MR. WALKUP: Why do I have to testify?

MR. REARDON: I am not asking you to testify, sir.

In any event, your Honor, I am now offering in evidence the negatives of these two photographs taken by Dr. Ehrlich when he examined the vehicle on September 25, 1970, which have been marked A-116 for identification, which I subpoenaed from Mr. Ehrlich late last week after the testimony of Mr. Severy, and I am offering in evidence at the same time blowups which have been made of these negatives, which I have already shown to counsel -- at least Mr. Walkup, and I think Mr. Schwab has seen them as well. These are blowups of the striker in the condition as it existed at the time it was examined by Mr. Ehrlich.

MR. SCHWAB: No objection.

MR. REARDON: Any objection, Mr. Walkup?

MR. WALKUP: No. I told you.

(Defendant General Motors' Exhibits A-116 through and including A-122 for identification were

received in evidence.)

Q Mr. Witness, the other day Mr. Severy indicated to the Court and the jury here that Plaintiffs' Exhibit G-1 and J-1, which he marked with purple pen, showed the forcible marks of disengagement that he said he observed in the striker, which is Plaintiffs' Exhibit 75 in evidence, and I'm now pointing out the purple markings which are on the striker as well, which were put there by Mr. Severy during the course of his examination.

Now, at my request, did you examine this exhibit and did you examine these photographs?

A Yes, sir, I did.

Q Marked by Mr. Severy.

A Yes, sir.

Q And in accordance with your suggestion, did we obtain these blowups of the two photographs introduced by Dr. Ehrlich on which Mr. Severy put the purple markings?

A Yes, sir.

Q And are these the blowups here, which are in evidence now as General Motors' A-117 through A-122 (handing)?

A That's right. The negatives that have been marked have been examined. I examined them under the normal size that they are, and I also caused those nega-

tives to be magnified in order to examine the condition of the areas of the strike plate that have been marked on the actual exhibit, No. 75. Those are areas on the recessed portion of the striker plate and over the shoulder at the lower portion of the striker plate (indicating). In addition, the portions of the upper active portion of the striker plate.

Q In connection with your examination of the striker plate and the markings that have been indicated, can you tell the jury what, in your opinion, the silver portions which are either circled or pointed to are in connection with this piece, Plaintiffs' Exhibit 75 (indicating)?

A On Plaintiffs' Exhibit 75, we have areas where paint has been chipped off. In fact, the reason why you have this white area is because the galvanized plate has been exposed after the paint has been scraped off, and there are exactly similar type of marks on the sides of the exhibit where the bare metal shows through the chipped paint (indicating).

Q Incidentally, the photographs, the blowups, they were done by a commercial photographer, were they not?

A Yes.

Q The same photographer that has photographed the

Plaintiffs' Exhibit 99, Mr. Carl Stevens?

A That's correct.

Q And has photographed the other photographs taken in this courthouse in connection with this case?

A That's correct.

Q would you tell us whether, in your opinion, those photographs, blowups, reflect the existence of these markings pointed to by Mr. Severy on the first exhibit, Plaintiffs' 75, which he indicated exists on Plaintiffs' 8-G and 8-J in evidence?

A In my opinion, and based on the examination of the negatives and the magnification of these negatives under the microscope and under the positive prints that have been introduced as Exhibit A-119, these markings did not exist on this vehicle right after the accident.

MR. REARDON: May I have the Court's permission to show these blowups?

THE COURT: Yes. We will show those and then we will take our midmorning recess.

MR. REARDON: I am going to show Mr. Severy's pictures as well.

THE COURT: All right.

(Pause.)

MR. REARDON: Your Honor, may I approach the bench with counsel?

THE COURT: Yes.

(Discussion off the record at the bench.)

THE COURT: We will take our midmorning recess, members of the jury.

(Recess.)

MR. REARDON: Your Honor, we have the film set up on the camera. At this time I would like to offer it in evidence, then show it to the jury.

MR. WALKUP: No objection.

MR. SCHWAB: No objection.

THE COURT: Received.

(Defendant General Motors' Exhibit A 82 for identification was received in evidence.)

THE WITNESS: The test vehicle is loaded with the concrete blocks. The right side door of the cab is instrumented with the strain gauges that you have seen before and the unit is on the dynamometer. The front wheels of the cab, or the vehicle, are on the dynamometer. The rear wheels are just on the floor and they are loaded down.

Now, as the vehicle is driven to 25 miles an hour, the front wheels of course speed and you will see them speeding, and at the same time the dynamometer has been set to fluctuate the front of the cab twelve inches up and twelve inches down.

This test was run over a period of about an hour, and what you are seeing there is the view of the cab frontally from the back and the blocks are going up and down, and finally, at the end of the test, where the cab is still going up and down at this high rate of speed and movement and

the instruments of course reading all the time the amount of forces that we have on it.

This is a view of the door on the right side. You see the strain gauge cables coming onto the door. The wheels are on the dynamometer rows and they're being driven at 25 miles an hour with the cab bouncing up and down as it sinks on one side, is raised on that side and sinking on the other.

You see the driver on the wheel, and at that rate of speed the man is really bouncing inside the cab the way he would normally experience anywhere during the use of this vehicle.

Now, this is the rear, and you see how the rails are twisting. The blocks closer to the rear axles are the ones that are fluctuating very severely. The ones close to the cab fluctuate minimally.

This is the left side of the vehicle, the driver side. The driver always on the wheel and the vehicle bounces up and down as the wheels are driven at 25 miles an hour, and the fluctuations up and down are twelve inches.

During the entire test the door was, number one, closed, number two, taped with the tapes that you saw in the photographs, where one could observe the movement of the door, and fully instrumented so that the minute distribution of

forces on the chassis rail and the cab door were measured and recorded.

MR. REARDON: Thank you very much.

CROSS EXAMINATION

BY MR. SCHWAB:

Q Dr. Morfopoulos, Mr. Reardon showed you the trailer attachment also known as a pintle hook, Exhibit C-195, which was passed to the jury earlier this morning.

A Yes, sir.

Q In addition to what you described about a bending, do you also see in that picture, sir, an actual broken latching device?

A That's correct.

The latching pin device has been sheared off.

Q Which indicative of the forces applied, at sometime at least, to that pintle hook and latch device, is that correct?

A That's correct.

Q When you were discussing with Mr. Reardon the trailer, if you will recall in the hypothetical question that Mr. Reardon posed he asked you to assume that the trailer had brakes on it but that they were not connected. Do you recall that?

A Yes, I do.

Q Now, what is the value of having brakes on a trailer of this nature?

A Well, the reason for having brakes on the trailer is quite simple. Namely, when the driver brakes the vehicle, then the payload in the back also will experience the braking action at the same rate; at the same time. So that it does not behave as a loose ball in the back, losse ball or loose payload.

MR. WALKUP: Payload.

THE WITNESS: Right.

Q And assuming you have an unbraked trailer of this nature, would you expect at some time during the course of this vehicle going out of control, at some point in the course of it going out of control, that this trailer would be whipping around in some fashion, something similar to the last man on an ice skating chain, as the analogy has been?

A Yes, sir, this is correct. The payload would be fishtailing uncontrollably at that point.

Q And would this affect the stability and operation of the vehicle during the course of this accident gyration of the vehicle?

A Yes, sir, it would.

Q Now, sir, are you able to work out from weight of the vehicle and speed of the vehicle the kinetic enregy just

exerted?

A Yes, sir.

Q Or produced.

A Yes.

Q Mr. Reardon asked you to assume 580,000 foot pounds as being the kinetic energy, and that was obtained, incidentally, through test and calculations of Mr. Severy. Would you please work out for us right now, so that we can have accuracies of this, the kinetic energy generated by a 28,000 pound vehicle going at 25 miles an hour?

A 25,000 pounds--

Q 28,000 pounds.

A I'm sorry. 28,000 pounds and 25 miles an hour speed?

Q Yes.

(Pause.)

A It comes out to 580,000 foot pounds.

Q All right. So then you agree, in effect, with the test of Mr. Severy, assuming that he said 580,000 foot pounds?

A I calculated exactly 584,000 foot pounds.

Q Now, would you please calculate for me the kinetic energy generated by a 4,000 pound automobile going at 50 miles an hour.

(Pause.)

A The answer to that is 330,000 foot pounds.

Q May I read something to you, and I want to ask you whether you agree with this or disagree with this. This is questions asked by me of Mr. Severy on March 6, 1974 under cross examination:

"Q Now I am going to ask you to do one last computation for me, sir, and I assure you it will be the last one so that the Court will not be concerned with counsel's wasting time.

Asssuming a person has got a 4,000 pound automobile loaded and it is going at 50 miles an hour, I was wondering if you would tell me what the kinetic energy in that is.

"A Sure.

"Q Generated by the 50 miles an hour 4,000 pound vehicle.

"A Probably be about the same or more because its speed."

Now, at this point do you agree or disagree with that that kinetic energy generated by a 4,000 pound car going at 50 miles an hour or greater than that of the truck we have been discussing?

A It is much less. The truck was 582,000 and the

50 mile an hour traveling car would have 333,000, about half of it.

Q Let me read a little bit more and ask you whether you agree with the following questions and answers:

"Q I would like you to figure that out, if you would, so we are very positive of it.

"A Okay.

"Q On whether it is less.

"A 530,000 foot pounds, which would be just slightly less than what the truck had.

"Q You came out to one at how much?

"A For the car, 530,000 foot pounds.

"Q Yes. And how much for the truck?

"A 580,000 foot pounds."

Now, do you agree or disagree with the statement that the 4,000 pound car going at 50 miles an hour generates kinetic energy of 530,000 foot pounds?

A No. That claculation is wrong. It is 330,000 foot pounds.

Q So then do I understand it, sir, that with regard to this truck, although some of us initially might think that it is only going at a speed of 25 miles an hour, in point of fact this 25 mile an hour 28,000 pound truck generates, and at the time that it hit this curb, substantially

more kinetic energy than an automobile that we might own weighing 4,000 pounds going at 50 miles an hour, is that correct?

A That's correct, substantially more.

Q Now, speaking in terms of the contact of that right rear tire and wheel with this median divider approximately 8 to 10 inches high, you used some terms about inertia and so forth. Would I be correct that when the tire and wheel hit the curb you actually have, insofar as the bottom of the vehicle is concerned, a stopping of the bottom part of the vehicle at that point; is that correct?

A That's correct. When it hits the solid curb, which is stationary, doesn't move, then the bottom will come to a dead stop.

Q And yet you have the top portion, if you will, let's call it the body or superstructure, going over to the right in that condition, is that correct?

A That's correct. This is what I indicated before as the gigantic torsional forces at that point. Because when the bottom is stopped, then the upper portion of the vehicle, or the superstructure, will tend to move exactly at the speed that it was going before.

So in effect what you have is the bottom immobilized and the top twisting the entire vehicle forward in the same direction.

Q So that I can understand it, getting down to basic laymen's terms, the curb was acting something like a fulcrum effect to assist in that vehicle turning and twisting?

A That's correct.

It would be a fulcrum effect, and the forces experienced above the point of contact would be of the magnitude of over half a million pounds.

Q Now, may I ask you this, sir:

Given the kinetic energy of the nature that we have been talking about, whether it be a truck or a car, but speaking in terms of let's say a half-million foot pounds of kinetic energy coming into contact with curbs, and particularly on some sort of a lateral direction of a vehicle, would you expect various types of vehicles to turn over under these circumstances?

A Given sufficient kinetic energy or sufficient speed, any kind of vehicle would roll over, turn around, turn over.

Q And in some instances, based upon the amount of kinetic energy involved, a vehicle may actually flip in the air some distance and then turn over, is that correct?

A That's correct. In fact, at high speeds this is what happens. The vehicle does not roll over smoothly. It

just flips up in the air and lands wherever it is thrown.

Q And in other instances, based upon the kinetic energy and speed of the vehicle, a vehicle may not flip over but it may more or less turn over or roll over, is that correct?

A Correct.

Q And this is true, as we have been discussing it, with automobiles such as many of us know, correct?

A Yes, sir.

Q Four wheel cars, sir?

A Yes.

Q That would be true with various types of trucks with various types of tire arrangements, is that correct?

A That's correct.

Q That could be true with trucks with dual rear wheels, I assume?

A Yes, sir.

Q And it could be true with trucks with single flotation tires also, I assume, is that correct?

A Yes, sir. Any kind of vehicle, given enough kinetic energy and a sudden stop, will be caused through inertial forces to turn over.

Q And when we are talking about a half-million foot pounds of kinetic energy, you are actually talking about,

* * *

CROSS EXAMINATION

BY MR. WALKUP:

Q Mr. Morfopoulos, I will start off where we ended, if I may, and then work backwards.

Mr. Schwab just asked you, sir, a number of questions about automobiles and their weights and their speeds and how much kinetic energy that would develop.

A That's correct.

Q Have you, before being questioned here today, ever had occasion to work for Mr. Scwab's firm as a consultant or an expert witness? I am referring to the firm of Berman & Frost here in New York.

A Yes. Our firm has done work for Berman & Frost before.

Q And over what period of time?

A Well, our firm has been in existence about fifty-odd years, and I am sure they were doing work sometime or other, you know, throughout the years.

Q Well, you are the director of your organization here.

A Since 1966. But my firm was in existence way before that.

Q But just limiting it to your term with the firm, from '66 to '74, that many years, have you had occasion during

that period to consult with and testify to Mr. Schwab's firm in various matters?

A Personally I have not testified for Mr. Schwab's firm. In fact I have testified against him on a couple of occasions. My firm has done perhaps two or three studies in that period of time that I am aware of.

Q Since you have been there, for that firm.

A That's correct.

Q Now, with reference to the questions which Mr. Schwab asked you, I am going to ask you to, if you would, compute a couple of speeds for me, and let's start off with the 1966 Chrysler.

Can you give me an idea what a 1966 Chrysler weighs?

A Well, there are many models. But on the average I would say a 4,000 pound weight is perhaps representative.

Q All right. Then would you tell me, sir, with reference to a '66 Chrysler that has an impact velocity with an oncoming vehicle at 40 to 45 miles per hour, what kind of kinetic energy that might generate?

A I'm using, as I said, a weight of 4,000 pounds for two reasons, because I don't know which figure it is. I have no tables here, and secondly to round out the figures so the calculation will be quicker.

Okay. This is in the neighborhood of 200,000 foot pounds.

Q All right. And would such an impact that I have described at that speed with that type of an automobile, and you have testified here about door latches and their integrity and so forth--I take it you have some background and expertise in the various types of door latches?

A Generally speaking, yes.

Q All right. Would that type of impact at that speed, in your opinion, put substantial forces on a 1966 Chrysler door latch?

MR. REARDON: I don't think there is any foundation for that question, your Honor. I know it is cross examination, but--

THE COURT: I will allow it in the light of the questions that were put by Mr. Schwab. I think he is testing the expertise and knowledgeability of the witness. I will allow it on that theory.

A I must say that I don't know. That would have to be measured and it is difficult really to say. It is fairly high kinetic energy and the door could be taxed or overloaded.

Q And by that do you mean that you might expect that amount of force the door to pop open?

A As I said, I have no direct measurements there and I really cannot say for sure.

Q How about flipping over several times of a vehicle as far as the integrity of the latches are concerned? I would ask you to assume in this case a 1967 Barracuda. What does that weigh, approximately?

A I really do not know. This is probably, again, in the three to four thousand pound category.

Q And you have testified about your experience with vehicles going through various kinds of gyrations and what effect that puts on the integrity of the door latch system, right?

A The structure of the type that I have studied.

Q All right.

MR. REARDON: What do you mean by "this type"? You pointed to something.

A I was talking about a chassis of an elongated shape and a superstructure, a cab and whatever is on top of the chassis.

Q Since we were going into automobiles here with Mr. Schwab, and from your knowledge of the mechanism of the car you have told us about and physics and so forth and so on, if you assume that a '67 Barracuda was going fast enough to roll and flip over several times in the air and land, would you

think that that type of an impact that I have described would develop kinetic energy at least of two or three hundred thousand foot pounds?

A I would say at least 200 and definitely more.

Q And would you think that that kind of roll over and flying through the air of a 1967 Barracuda would put a substantial strain upon the integrity of the door latch mechanism of such a car?

MR. REARDON: I object, your Honor.

THE COURT: Overruled.

A Again, I don't have any personal experience with that. It might. It might not.

Q Let me back up now for a moment.

Have you met Mr. Reardon before your association with this case?

A Yes, I have.

Q And when and under what circumstances?

A Again, my firm has done some work for Mr. Reardon's firm. I have personally testified for him, I believe, twice in the past and I have testified against him a handful of times.

Q All right. Let's take General Motors Corporation. Have you previously given testimony for General Motors Corporation?

A Yes, I have.

Q And how long is your association with General Motors Corporation go back?

A I think the very first time that I was personally involved in a GM case was back in '68, and through my years, the period '66 to this date, I have worked on half a dozen or so cases for General Motors and a few dozen cases against them.

Q All right. Your firm, you say, goes back many years before your association with them. And they publish and circulate a list of their clients, with which you as director of the association are familiar, are you not?

A Yes, sir. We have a brochure that gives a representative list of our clients.

Q All right. And that representative list includes General Motors, does it not?

A Yes, sir, it does.

Q Now, also this same brochure, with which I know you are familiar from your testimony in previous cases which I read, includes all of the various services which your firm renders, starting with abrasives up to and including welding and meal joining, correct?

A Yes, sir. Our firm covers the entire area of engineering, engineering sciences and applied sciences.

Q And without bothering to read them, I would say you list here everything from fertilizers to fibers and textiles, organic chemical packaging systems. It would be about 150 different fields,right?

A Well, as I said, I have never counted them, but our various divisions of the Bureau cover all aspectsof engineering and applied sciences.

Q You, yourself, are not solely limiting your services through this Bureau to automotive work, are you?

A No, sir. My work is to a large degree involving equipment and automotive systems, but it is not narrow in that sense. It is more through to the field that I described, namely engineering sciences, and there are engineering systems beyond automotive systesm.

Q Let's take just your own experience just in years that you have been with this organization. Have you testified in cases involving the collapse of a ladder?

A Yes. A structure such as a ladder, a scaffold, this type of thing would definitely be within my field.

Q Give us some other examples of the types of cases in which you have testified as an expert outside of the automotive and truck fields or latch field.

A Well, as I said, in my work with the Bureau in the field of engineering sciences that I described I

I come in contact with all types of equipment and all types of structures, and my concern is to study how the materials interact with the structures and that would include scaffold--

Q Pardon me. I thought I asked a simple question. Let me restate it.

Tell us, please, the fields in which you have testified as an expert since you have been with this testing bureau in New York or any other states or anywhere in addition to automotive.

A Well, as I told you, only one field, engineering sciences. This is the field. You are asking me about the applications?

Q Yes.

A And I gave them to you: Equipment and structures.

Q All right. As far as equipment is concerned, we know you testified as an expert in ladders, right?

A That is not equipment, sir. This is structures.

Q That is a structure. Okay. You testified in one case involving a punch press that cut off a man's hand, I believe?

A I am not sure whether that was the case, but I have worked with--

Q Well, it was claimed it cut off his hand or part of his hand.

A Well, I have worked with heavy equipment such as presses, yes.

Q All right. Now we have ladders, heavy equipment such as presses. What other fields have you, yourself and not your organization be involved with?

A Well, again as I explained to you, you are calling them "fields". Those are not fields, sir.

Q All right. Examples, if you will.

A Equipment such as off the road trucks, fork lift trucks, equipment such as let's say gasoline powered small trucks of all types, structures such as frames of all types, ladders, scaffolds of all types, anything that has to do with equipment and structures. This is my field.

Q And how much such examinations or tests or reports do you, yourself, make in a year for various firms?

A In the course of a year my involvement in this field is about thirty or thirty-five percent of my time, and that involves about 100 to 125 engineering studies of this type.

Q Are you semi-retired? What is this 30 to 35 percent of your time?

A Oh, the Bureau is covering the fields that you indicated, and in that activity we do a lot of work in consulting for government agencies, for industries in terms of

what I described before in my particular field as selecting materials, specifying the design requirements of materials and structures, devising specifications, establishing safety standards and other governmental standards that go with such structures or materials such as codes and so on.

MR. REARDON: Such as what?

THE WITNESS: Codes.

Q For all of your particular field, such as ladders, structures, scaffolding, little tractors and so forth, in your particular case, right?

A Well, again, when it comes to this type of a project, we would have a team that would be--let's take a typical example of a safety standards. That may involved some, let's say, questions in pneumatic design. Then we would have a guy, an expert on the staff who is an expert in air moving equipment, we would hav a man knowledgeable in engineering sciences such as myself, we would have a man knowledgeable in technical writing or specifications writing, and in those cases we would work as a team which covers the entire aspect of the standard for the problem.

Q Well, let's get then to the thirty-five percent of your time that is spent in connection with litigated matters or tests and analysis and so forth in connection with litigated matters. Do you in that connection, as director

of the New York office here, send out, or are you aware of the literature which American Standards Testing Bureau, Inc. has mailed out to the lawyers in New York and elsewhere about the type of services that you will render to attornesy who hire y ou to consult with them in a litigated case of this kind?

A No, sir. First of all, I am in the technical end of the business. I know that our sales people make a point to inform all professionals, including attorneys, as to what services they can retain through the Bureau and what types of expertise we have.

Q You testified over in Queens for Mr. Reardon in a case within the last couple of years involving a General Motors plate that was supposed to cover a clutch, did you?

A No, sir, it was not covering the clutch. It was the clutch plate itself under stresses and loads of this type, yes.

Q For General Motors?

A Yes, sir.

Q And in that particular trial were you not asked about your familiarity with the literature which your company sends out and you admitted that you were familiar with the claims made as to the services you will render to attorneys handling cases that solicit your services?

A During that occasion I was handed a piece of paper and I was asked whether I recognized the stationery and the signature of the man who wrote the letter and I said yes, and I am sure, if you have aletter where the Bureau stationery appears, then I will recognize it.

Q Well, I want to go a little further than just having you recognize it, sir. I hand you a document. That's one of the advertising letters sent out to lawyers throughout the country and all the lawyers in New York with reference to services you provide, correct?

A This is a sales department piece of literature informing, presumably able lawyers and others, as to the expert services of the Bureau.

MR. WALKUP: All right. I would like to have this marked as the Plaintiffs' next exhibit, if I may.

THE COURT: Any objection?

MR. REARDON: There is something blocked out, maybe, if Mr. Walkup tells me what it is, if he knows--

MR. WALKUP: The word "insurance".

MR. REARDON: Okay. I have no objection.

(Plaintiff's Exhibit 106 was received in evidence.)

Q Now, sir, one of the claims made here is that your staff handles over 7,000 assignments per year nationwide

and over ninety-five percent of the cases tried are decided in favor of your clients.

A This is correct, by the way.

Q That gives the people that don't hire you statistically about a five percent chance of winning.

A No. Nobody hires us. And as to this, to begin with, very few of our cases are being tried, because a great proportion of our findings could be negative to the client. And in those cases, I can assure you, we would not testify, and that is not included in the statistics.

Q In your most recent literature just sent out within the past week or so, I want to ask you, are you familiar with services rendered by your organization in a case in the Federal District Court in the Eastern District of Louisiana where a 4 year old child was burned in the blowing up of a heater? Did you have anything to do with that one?

A Personally?

Q Yes.

A No, sir.

Q Was it your organization?

A Yes, sir.

Q I take it from the argument on that side in that case--

MR. REARDON: Objection.

THE COURT: Sustained.

Q Did your organization, to your knowledge, also appear in a civil suit in the U.S. District Court in the Western District of Texas here recently involving a--

MR. REARDON: Objection.

THE COURT: We are not trying other cases, what the other cases involved. You may inquire as to the nature of his testimony in other matters, but we are not interested in it or matters really.

MR. WALKUP: All right, your Honor.

Q Let me pass then to material relating specifically to this case. In this case, when were you first consulted by Mr. Reardon?

A In January of this year. To be exact, on January 10th.

Q January 10th of this present year?

A That's correct.

Q The first association or connection you had with the case at all?

A That's correct.

Q And I assume that you have file relating to this case?

A Yes, I do.

Q Do you have it here with you?

A Yes, I do.

Q And are all your reports and material in it?

A Yes, sir.

Q And when you were first consulted in the case, what material were you furnished?

A I was furnished with twelve items. Do you want me to read them off?

Q I would like to know what they are, yes.

A Certainly. The Motor Vehicle Accident Report filed by Trooper Dancisin of the New Jersey--

Q We know who he is.

A --State Police, the Motor Vehicle Accident Report filed by Jersey Central Power & Light, a deposition of David Burlew, specifications of GM 7750 series trucks, a copy of the new vehicle invoice for this particular accident truck, black and white photographs of the accident site, color photographs of the accident at the scene, copy of a deposition of Mr. Kenneth Leighton, plaintiffs' answers to interrogatories filed in December of '73, the Pitman Manufacturing Company drawing to which I testified before, the Hendrickson Manufacturing Company specifications to which I testified before, and a post-accident damage survey and repair statement on the truck in question.

Q All right. Were you able to determine from the documents that you were furnished from either Pitman or Hendrickson what changes were made in the rear duals that showed up in the General Motors specifications?

A Yes, sir, I was.

Q What were you able to determine from those document as to who did what to those rear wheels?

A Yes. That plus my listening to the testimony in this courtroom, and I would combine those.

Q Pardon me. When have you been listening in this courtroom?

A I was here on two occasions when Mr. Severy was testifying and in cross examination.

Q How many times?

A Twice.

Q You mean through his whole testimony you sat here?

A No. I was here through portions of his testimony on two days, two occasions. And the modifications made to the rear axle of the vehicle, to the rear axle system, was an instrumentation of single super tires for the duals and the beefing up of the spring suspension.

Q What I was interested in, is, can you assist us, from the documents taht were furnished to you, as to who--

your Honor, I have a photograph of this which is in evidence. Can I erase some of this on the board?

THE COURT: Is that agreeable to counsel?

MR. WALKUP: Plaintiffs' 99. I have a copy of it which is a very good print. Your photographer took it and charged $75.

Q What I am talking about, sir, is, you interer-preted some photographs here for us. I assume that comes within your field of expertise, right?

A Well, I can look at photographs and try to see what is on them.

Q Is that one of your specialties?

A Again, I can read photographs as to whether or not they show something or other within the limits of my knowledge as to what is portrayed on the photographs.

Q Well, what I mean is, you testified about photo-graphs. Do you contend you have any expertise in looking at a photograph and seeing what it shows other than the average individual person?

A Of course. I would say so.

Q Then I would ask you, in view of that, if you would kindly look at Plaintiffs' Exhibit 58 (handing), and that shows this truck that is involved in the Lane accident upside down at the scene of the accident, right?

A Yes, sir, it does.

Q I want to direct your attention specifically to the front and rear wheels because you can see them both and you can see this upside down, just like looking right down on it, right?

A Yes, sir.

Q And if I make this the front of the truck here, and if I make this the rear of the truck here, and I know the truck didn't have a nose but I will put a little rounded part here for the front, looking at that upside down picture you can see, can you not, the front wheels and axle, and I will ask you in your interpretation of that photograph if those front wheels are not substantially even with the body of the truck. Does it appear to you to be, as a photograph reader?

A With these conclusions, that is a conclusion that would be simply a guesstimate or a guess, because as you see them they are somewhat turned and the photograph is not, you know, a true plan view of the bottom, but I would not have any way of quarreling with what you say.

Q All right.

MR. SCHWAB: I don't wish to interrupt, but I have no objection to counsel's cross examination of this witness. That's fine. I object--

THE COURT: How can you object to his cross examination of the witness? You are saying that as if there is some privilege to do that. That's his right.

MR. SCHWAB: You are right about his right, your Honor. But I do object to counsel talking with chalk, really. I mean the photograph speaks for itself and he should ask questions.

THE COURT: Well, we have had so many demonstrations through witnesses which were projected by counsel that I am going to allow this in the hope that it will clarify matters for the members of the jury.

If you have an objection to a specific question, you may raise it, of course.

BY MR. WALKUP:

Q Looking at that upside down photograph, does it not appear to you, sir, as an interpreter of photographs, that the rear configuration of wheels is substantially shorter in the axle, in the differential, than the front wheels?

A The rear wheels are much more true to the plan view, to the bottom of the truck plan view than the front ones.

If we accept your illustration for the front wheels, which as I said is not readily discernible because they are turned here, the rear wheels have an orientation

which does place them inboard by a certain amount of inches, a few inches, as you have drawn them.

Q Well, now, the few inches, do you have actual measurements of how few you are talking about?

A No, sir, I don't.

Q That is an estimate or a guesstimate on your part, the few inches, from the photograph? Right?

A Yes.

Q All right. But that's what I was talking about. In this particular situation, the rear wheels appear at the time of the accident to be shorter at their axle and more inboard than the wheels on that model which you used than on the truck which was used in your tests and studies, correct?

A Yes. The general installation location of those wheels are, as they are shown in the photograph, somewhat inboard.

Q All right. Well, now I am coming back to what I started to ask you, and in the material which you were furnished to review this case were you furnished any information which tells you whether it was Hendrickson Manufacturing Company or Pitman Manufacturing Company that altered those wheels in such manner as to put them in that position?

MR. REARDON: I object, your Honor.

THE COURT: Objection sustained.

MR. REARDON: That is unfair.

THE COURT: The jury is instructed to disregard the comment of counsel. I sustained the objection.

Q Well, you were furnished, as I understand it, with the Pitman drawing, correct?

A Yes, sir.

Q And also material from Hendrickson?

A That's correct.

Q And I would like to see the material from Hendrickson that you were furnished.

A Certainly (handing).

Q This is our old friend the quotation, I guess. That's all you've got to show what Hendrickson did to that vehicle?

A Yes, sir.

MR. REARDON: I move to strike counsel's statement that the Hendrickson quote is an old friend, your Honor.

THE COURT: The motion is granted. The jury is instructed to disregard the comment of counsel.

Q Is it a quotation from Hendrickson? And tell us the date of it.

A Dated March 15, 1966.

Q Now, the elements of that long hypothetical question which you were asked, I assume you had heard those

before you came here today, right?

A I believe I did, yes.

Q Yes. And you wrote them all down as you went along.

A I took down all the salient points, or the key points, of the hypothetical question in terms of facts and figures.

Q All right. You demonstrated with that truck gyrations that it went through. Did you ever put a truck similar to the one that you know to be involved in this accident through any tests of any kind, shape, character, form or description?

A When you say the same one, are you talking about something similar to Exhibit A 112?

Q Well, similar in some respects only. I am talking about one that has super balloon tires, with the rear ones inboard to the front ones and the big boom on it and such as shown in the photograph at the scene of the accident.

MR. REARDON: I am going to object to that question, your Honor, because it assumes in some character at least that the tires at the rear were mounted inboard at the time it left General Motors, Hendrickson or anywhere else.

MR. SCHWAB: I join in that objection.

MR. WALKUP: I will withdraw that and reword the question.

Q You saw the vehicle that was in the accident?

A In the photographs, yes.

Q You never conducted any tests of experiments to see how that particular vehicle would perform mounting curbs or going up and down through potholes, did you?

A I don't believe you could do this --

Q Yes or no?

A On that vehicle you couldn't do this test. It was already damaged plastically, so you could not do the tests that I did on that particular unit.

Q Who furnished the big truck to you with ten serial numbers away from the one that was involved in this accident, with wheels and cab and all that on them?

A I personally requested such a vehicle, and I believe this was located through a General Motors dealer.

Q All right.

Did you make any effort to locate for testing a vehicle with super balloon tires on this type of rig mounted similar to those involved in this accident?

A No, sir, I did not.

Q Now, let me ask you to assume that -- you have told us that that vehicle there that you tested could go up over a 12-inch curb without any problems; right?

A Absolutely.

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Q Suppose I asked you to assume that people who drove this particular vehicle involved in this accident put boards down in the gutter when they wanted to go over a curb because they couldn't go over the curb without boards. Would that be a different performance characteristic in mounting curbs of the vehicle in this accident, as opposed to the curb mounting characteristics of the vehicle you tested?

A No, sir.

Q None at all?

A What you describe, in other words, boarding up a curb, number one, will give a smooth ride so the driver will not feel the jolt, and, two, it will save the tires. If you keep on mounting curbs like that, you are going to ruin the tires. So it is always recommended to put the board across the curb.

Q Are you telling us, sir, based on the experience you have had, that that rig or piece of equipment shown in this accident to David Lane had the same curb-mounting characteristics as the model that you tested with the cement blocks on the back that shows in those movies?

A Absolutely.

Q Absolutely.

A Yes. In fact, the movies and the photographs

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which I showed you are specifically designed to portray extreme conditions for this vehicle, and in my test vehicle the whole structure was not made into a heavy-duty type of system, as the accident vehicle was, and the accident vehicle, being of more heavy-duty construction, it would take the mounting of a curb much more lightly.

Q How about the stability from sideways motion in attempting to mount a curb of your test vehicle with those cement blocks which in the photographs look like they are down sort of low on the frame as opposed to a superstructure such as you saw in the photographs that were furnished you on this accident vehicle?

A Sir, when you say stability, are you talking about -- stability is a very general term in engineering terms. Are you asking me about a straight mounting of the type that I described minus the spinning around or everything together?

Q I'm asking you about stability as far as having side sway or lack thereof on an uneven ground or operation, a feeling of top-heaviness, a question of stability, bearing in mind the reduced measurement of the rear wheels as opposed to the front, that type of stability.

Do you understand that?

A Yes. I would say that in terms of drivability or driving stability, my test vehicle was more stable than that vehicle.

Q Why?

A Because I was not literally testing the superstructure. I was just testing the structure of the vehicle itself as to how it is torsionally loaded when it does perform under severe conditions, and I was also testing this cab here (indicating), which was the same.

Q Well, as an engineer, can you tell us why a vehicle with concrete blocks down low, such as is shown in those photographs, would have more stability in test performance than one with an elevated superstructure and larger tires?

A Well --

Q Raised springs?

A Okay. The tires and the springs, I would take them just simply as an element influencing the orientation, or the position of the vehicle off the floor or the pavement.

Simply what you are describing is something that relates to the center of gravity of the superstructure, and definitely if you raise the center of gravity as far as the superstructure is concerned, that would be, you

know, a difference.

Q Well, you described one test where you took your vehicle with those cement blocks on it and you ran it through a chuck hole, I think you said it was about 12 inches deep; right?

A No, sir. The vehicle was tested only under two specific conditions, starting, those are the photographs that you saw and dynamic in the dynamometer. The vehicle was not tested in a single pothole. This bouncing up and down at 25 miles an hour corresponds to one pothole every time the vehicle goes down on one side and another pothole when it goes down on the other side, and so forth and so on.

So the test was, in effect, equivalent to many potholes.

Q I see.

You didn't actually run that vehicle that you tested through any hole such as somebody might encounter out in actual operation to see what would happen?

A No, sir. As I said, this is a very mild test, very insignificant.

Q Was your test with the simulated potholes, if I may call it that, one designed to test the stability of the vehicle or just the torsional effects?

A Just simply the load, the torsional effects on the chassis and the cab.

Q Well, do you have an opinion, based on your engineering experience and background, as to how much better your truck would perform as to stability in that chuck-hole test, the pothole test that you described,as compared to a vehicle such as involved in the Lane accident, with the tall superstructure and the super balloons and the beefed-up springs, and the other facts which you know about from the material that has been furnished to you?

A In our type of test, the superstructure would have nil effects, negligible effects, because what you have there is physically a load coming down on the chassis. And when you go up and down like that (indicating), you physically have the back of the chassis locked down because of the load which I described when we were demonstrating here, and also in the movie.

Now, the type of stability consideration that you are describing comes into play much more importantly in a physical movement or swerving of the vehicle on the road and not in the loading aspects of it.

Q All right.

We are interested to some extent in how the vehicle performed on the road and that's why I'm asking

you this. Let me ask you this:

I will ask you to assume that one of the young men who rode in the subject vehicle before the accident had the experience of one wheel going through a pothole in the raod, 9 or 10 inches, I believe, and at that point it felt like the vehicle was going to tip over. That would be a practical demonstration of the stability or lack thereof of the actual vehicle, would it not?

MR. SCHWAB: May it please the Court, I object to the form of the question because it encompasses testimony that is not in this record. I recall that testimony of that man, and we asked him questions, and I read it over this week end, and I make the representation to the Court that the witness was unable to describe the size of the holes. He said it was covered with vegetation or weeds or something like that, and I can get it out on an index card.

MR. WALKUP: In the interests of time, I'll withdraw the question.

Q Is one practical test of the stability of the vehicle how it performs in its completed, total state with the superstructure on and the tires and equipment on it in rough terrain?

A Yes. You could test the vehicle on rough terrain

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of this type, yes.

Q And you have made no such tests to try to figure out the stability of this particular vehicle that was involved in this accident?

A No, sir, I have not conducted any stability tests.

Q While we are on the subject of tests, you have told us about the type of latch involved in this particular truck and we have heard a lot about it here for two weeks. You mentioned, I believe two times in your qualifications, that you belong to the Society of Automotive Engineers.

A Yes, sir.

Q And you have belonged to that for how many years?

A Over ten years now.

Q And you have attended, I suppose, some of their meetings?

A Some of them, yes.

Q Have you received their reports on various subjects in your field of interest over the years?

A I do receive reports, yes.

Q And now, when General Motors came to you in this particular assignment that they gave you -- and you knew that you were going to come to court and tell the Court and jury in a case of a man seriously injured,

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you knew that, right?

A I do know that there was an accident injury, yes.

Q And you were going to come and give your opinion about truck door latches and their function and what would or wouldn't cause them to open; you were generally aware of that, right?

A Well, again, your question is very general. I did specifically study the system in the manner which I described, and the latch was part of the door system, as I have indicated.

Q All right.

What I'm getting at is, did you have a budget to work under?

A What do you mean?

Q Was there some limit put on how much time or money you could spend to prepare this thing properly?

MR. REARDON: I object to that question, your Honor.

THE COURT: Objection sustained.

Q Well, did you try to educate yourself on the subject of truck door latches that were in use and had been in use so that you would be familiar with the various structures and types of door latches in a truck?

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A I studied very carefully this particular truck and this particular door latch.

Q Well, did you, by any chance, refer to the Society of Automotive Engineers' report on truck accidents and truck safety by Robert A. Wolf of the Cornell Aeronautical Laboratory, which was delivered at the mid-year meeting in Detroit, Michigan, in 1968?

A No, sir, I didn't.

Q Do you have any knowledge at all from any source, SAE or otherwise, about the use of other types of truck latches than the truck latch which was used on this General Motors truck?

A I have seen truck door latches on occasion, and this is typical of cab door truck latches.

Q The ones you have seen.

A Yes.

Q Have you ever seen an anti-burst or safety truck latch or made any tests on that type of truck latching system to see how it performs?

MR. REARDON: I object to the form of the question, your Honor.

THE COURT: I'll allow it if you confine it to the period prior to the date of delivery of the truck to the Central Jersey utility company.

MR. WALKUP: All right.

A No, sir, I have not seen any door latch system substantially different than this prior to that date.

Q And had you checked the literature at all to determine whether there was in fact in trucks, prior to the date of this truck, safety door latches, or so-called anti-burst or completely encapsulated truck latching systems?

MR. REARDON: I object. I think counsel is now suggesting something which I don't, with all due respect, believe to be so.

THE COURT: Let me hear the question. There is one part I missed there.

(Record read.)

THE COURT: What date are you referring to?

MR. WALKUP: The date that General Motors put the chassis together, which would be in late '66 or early '67.

THE COURT: I'll allow it.

A No, sir, I am not aware of any such literature.

Q Have you ever in your career, for General Motors or anyone else, made any tests on any other type of door latching system than the door latching system in this case?

A No, sir. I just said the predominance of door latches in systems are the rotor-striker type, and I have seen many of them.

Q My question was more specific than that, and I'll repeat it.

Have you ever done any tests on a type other than the type that was in this GM truck to see how the other type of safety latch performed?

A No, sir.

MR. REARDON: Objection.

THE COURT: He has answered already.

Q Let's get a little more specific.

Have you ever done any testing before on door latches in vehicles, automobiles or trucks, other than your one experience in this case?

A Yes, I have.

Q And what has been your background and experience in such testing?

A Exactly what I have testified to here, namely, and I am specifically referring to the fire engine program that was fairly extensive. The performance of the chassis and the cab during curb mounting and cornering is dominated by the restraints of the door system against the frame, and there is literally nil amount of forces on

the door latch per se.

Q Were those studies done to test the door latches on New York fire engines?

A This was one of the subjects of the study. It was physically a study to determine how these long carriages of fire engines perform, as I say, going around corners at high speeds and accidentally mounting the curb over narrow streets.

Q How long a structure are you talking about? Hook and ladders?

A Yes.

Q How long do they run?

A Hook and ladders stretch over 40 feet.

Q But was that the basic purpose of your study on those New York fire engines, to determine the effect of the hook and ladder in cornering and so forth?

A Yes, it was --

Q It was not a --

MR. REARDON: Could he finish the answer?

A It was a total study of how the chassis performed, how the superstructure performs when it goes swinging around the curbs, how the cab performs and the doors and the entire portion of the vehicle, tires included, suspension, et cetera.

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Q Well, was it sent to you as a latch study?

A No, sir. It was a total study. This was simply a study for the purpose of evaluating designs of vehicles and chassis and so on.

Q What model fire engines and what make were you dealing in?

A They were four manufacturers. The major one was American LaFrance. We had White trucks.

MR. REARDON: White?

THE WITNESS: Yes.

A We had International Harvester, and I believe we had General Motors.

Q And what year was this?

A This was in '67-'68.

Q Did you at that time make any study, make any documentation, as to the types of truck latches that were in those various makes of fire engines?

MR. REARDON: Objection, your Honor. It is of post relevance.

THE COURT: It goes to his experience and qualifications as an expert. That is the basis upon which I am receiving it.

A No, sir, there was no specific latch study. The latch was part of the door system, the cab system in

totality.

Q Have you had occasion to be consulted by anyone with reference to ejection of a passenger as a result of a door opening during a roll-over type of collision?

A I believe I have studied accidents that involve that situation.

Q And what model cars or trucks were involved in your studies in that regard?

A They were strictly passenger cars. I have never seen, in my experience, an accident involving a truck in this type of problem.

There were studies performed for private and public entities other than manufacturers that involved the opening of doors on roll-overs or accidental openings of doors.

Q I take it, in connection with those studies, then, you tried to familiarize yourself with the state of the art as to the various types of old and used door latches and their performance, did you?

A Well, again, I must say that a failure analysis study of the type that I conduct, in this type of thing or situation, would be to examine the system and determine how it failed, if it did fail, and to try to simulate the conditions of the accident. This is the scope of the

study, as opposed to what you are saying. The study that you are suggesting is one that relates to a different type of inquiry.

Q Now, did you do any studies or any instrumentation with respect to the latch on the man cab that was attached to the GM chassis on the completed vehicle in the Lane accident?

A No, sir, I didn't.

Q And were you informed in the material that was given to you that in this same roll-over accident, the same mounting of the curb, the same hitting of the rear wheel, and the same action of the trailer, that the right-hand door on that man cab did not come open and the latch did not part?

A I heard this type of testimony in this courtroom.

Q And it is your opinion, as I understand it, that the forces involved in this accident as you reconstructed it were of such great magnitude that a door latch just couldn't take those forces; right?

A Yes, this is the opinion that I have.

Now, the carrier compartment that you are describing was not in the extremes of the chassis, so there are slightly different engineering considerations there.

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Q Did you try to figure out those slightly different considerations?

A Yes. And I've already described them, in fact.

As we saw in the movie and also in the demonstration of what happens in this twisting field of forces, it is like an "X" -- well, it is like an inverted "X" twisted at its ends. At the center, where the center blocks were, you have the minimum amount of twist because the amplitude of the torsional wave manifests itself at the ends.

So, generally speaking, the forces in the middle of the chassis will be much less, as opposed to the rear end and the cab.

Q In the studies that you made or analysis of that, you found out, did you not, that the man cab was attached not only to the frame but also to another steel structure that ran back almost to the rear wheels?

A The superstructure was unified in that manner, yes.

Q And that would be subject to a lot of the same forces and stresses in the roll-over collision such as described that would put a strain on that structure, would it not?

A Well, again I would say that this is not so

because the supporting -- the major torsional effect stems from the frame, from the rails. Now, if, for example, we have what you have just described, let's say the cab here with a post connecting to another portion of the superstructure, then again you would have some flexure of that post. But the basic post still sits in the quiet portion of the torsional field.

Q Well, it is connected to the other steel structure, is it not?

A Again, the frame, the whole compartment, sits on the rails. Now, if, for instance, you have a disturbance on the wall which twisted in that manner (indicating), you still do not twist the frame of that cab in the manner that you twist the vehicle in the front and in the back.

Q Isn't this tilt cab designed so as to have the minimal distortional effects that you told us from twisting the frame?

A That is correct. But this is only within the elastic limit. But once you go beyond that, then you really have a completely warped, permanently deformed system which is no longer representative of the design.

Q All right. Let's get into that damage which occurred in the roll-over accident.

How much did that superstructure weigh, roughly?

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A I don't specifically recall. But about 25,000 pounds, something of that sort.

Q A 25,000-pound weight with an elevated boom on it, how high is that superstructure from the chassis?

A Well, I don't recall. I would say when nested -- well, let me just refer to something.

Well, this is shown to be about 70 inches, I believe, above the axle level.

Q And then the boom is on top of that?

A That is correct. The boom is approximately 24 inches on top of that.

Q Did you make any studies as to how much that boom or superstructure weighed, the highest part of that rig?

A I don't think you can calculate that unless you know the minute details -- in minute detail, the design.

Q What I'm getting at is this:

There are a lot of forces that were involved in the total damage that occurred to this rig in that roll-over, are there not?

A Absolutely.

Q And some of those forces are exerted when that big 25,000-pound superstructure flops down on the

ground, and at that point things have a tendency to keep going and the ground has a tendency to stop them under Newton's law of motion, or whatever it is; right?

MR. SCHWAB: I am going to object to the form of the question because --

MR. WALKUP: I'll reword it.

MR. SCHWAB: It incorporates a weight figure --

THE COURT: He said he is withdrawing it and starting all over.

Q You tell me, sir, in the interest of time, here, aren't there forces that will tend to damage that big heavy rig with that big boom on it and all those shelves and cabinets and so forth, that are going to operate at other places than just when the rear right wheel is hitting the curb?

A Your question is too wide, but I will answer it in parts.

Q Thank you.

A The kinetic energy, which is a property of this moving vehicle while it is moving unobstructed, would be at its maximum, in terms of inertial forces, on impact. After impact, the vehicle was reported to have mounted the median and rolled over. Now, the moment you have a roll-over, you no longer have weight on the

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chassis, because the chassis is more or less lifted up in the air. Okay?

So when it comes down, the forces are minimal on the chassis itself for two reasons: Number one, because you no longer have this gigantic, half-a-million foot-pounds impact which you had at first, but also you no longer have the weight of the superstructure bearing down on the chassis, but you have it more or less again floating, because it is up in the air and what is going to come down and hit the ground is the superstructure which will carry its own weight and carry its own damage.

So, in effect, the most demanding and the most taxing moment of this sequence is when the kinetic energy in full comes into the first contact.

Q Is there kinetic also involved in the superstructure, in the cabinets and the big boom hitting the ground?

A Yes. At that point you will have, let's say, a speed which is much less than 25 miles an hour and you will have the weight of that portion of the superstructure which is a fraction of the total weight. And, again, one can go into the same computation. Let's say a fraction of the total weight, 10, 25 thousand pounds, times something like 2, 3, 4, 5 miles an hour,

and you will have a corresponding kinetic energy for that part.

Q Now, that static test that you told us about that you did on the truck that you had, that was lifting with hydraulic jacks the area by the right front door?

A By the left front.

Q Indicating going over a curb.

A That is correct, with the left front wheel.

Q Would that static test with the hydraulic jack be equivalent to that truck at 25 miles an hour hitting a curb?

A The static test is representative of what happens to this frame if it is more or less statically or permanently fixed in that upset position, and in that sense it is severe. Now, the mounting of the curb in movement was simulated by the bouncing of the vehicle on the dynamometer road. This is the significance of the dynamic test.

Q Let me repeat the question I asked you:

Was the static test of jacking up the left front wheel equivalent to driving the vehicle at 25 miles an hour, say, into a 9 or 10-inch curb? Yes or no?

A No.

Q And was the dynamic test the equivalent of

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driving at 25 miles an hour into a fixed object such as a curb?

A Yes, sir.

Q You are talking insofar as it might impart torsional forces --

A Absolutely.

Q But the sort of a rolling motion you had there I noticed in the motion pictures, as opposed to some of the crash tests that you have undoubtedly seen, where they actually take a vehicle and drive it into a fixed object; right?

A That is correct. This is where the half-million foot-pounds comes into the picture.

THE COURT: Where what?

THE WITNESS: The half-million foot-pounds of kinetic energy comes into the picture.

Q Are you telling us that there is a half-million foot-pounds of kinetic energy on that truck each time that it went through the rolling test in your movies?

A Yes. But there is no counteraction there because you have a -- definitely you do. The kinetic energy is the product of the weight times the speed. WE had exactly the same weight, exactly the same speed, and the only difference is we didn't have the sudden impact.

Q Was there any significance to the sudden impact?

A In terms of having the gigantic kinetic energy reaction, inertial forces, yes.

Q Now, you told us about the pintle hook and it took a lot of force exerted on that to bend it, you told us; right?

A Yes.

Q Steel is very strong and can take a lot of pulling and torsion before it will break or fail; correct?

A Steel has a very high elastic limit. In other words, you can stress it substantially before it deforms permanently or going beyond the deformation tearing apart.

Q Do you happen to have any knowledge as to the strength of the steel in the latch on the man cab door that stayed closed when this vehicle went through all these gyrations that you have told us about and all these forces?

A You mean the actual capacity of the steel?

A Yes.

A Certainly.

Q What kind was it?

A Well, this is carbon steel galvanized plate, as I indicated before, and it is about 80 to 90 thousand

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pounds per square inch.

Q Is one shape of steel that has great strength a round steel bar?

A No. The strength of any part depends on its cross section. If you have, for instance, a round part of this diameter and you compare it with a flat piece thicker than that or higher cross section, the flat piece will have much greater strength because it has greater cross-sectional area.

Q Sir, you testified as an expert in structure cases, and some of them have involved probably reinforcing steel bars, have they not?

A Oh, yes.

Q And what shape are reinforcing steel bars made in?

A They are round. But this has nothing to do -- don't confuse it with the strength of the material. In the case of the reinforcing bar, is so because these bars are extruded much more easily in a round form. If you had the same size square bars, you will have greater strength because you have greater cross-sectional area.

Q Then, is what you are telling us that a square bar of steel of the same type of steel and the same dimensions as this article that I'm talking to, and you probably have one of these on your own car, if you

look, sticking out on each door --

MR. REARDON: Objection, your Honor.

THE COURT: Yes.

Q You know what this is, for the record. It is part of the latching system that sticks out from the closing side of the door that catches the latch. I'm identifying it. That is the part you are familiar with, are you not?

A Yes. It is the part in the car.

Q And, of course, trucks in their construction are made more durable in all respects than passenger cars because they are bigger and heavier and carry more weight and they have more strains and stresses put on them; right?

A This is why the door of a cab is constructed in the manner that I described.

Q So I guess that since that pintle hook takes a lot of strength to bend that steel, that it also in correlation has quite a capacity to resist pulling apart, a good piece of steel; right?

A No, sir. Again I think you are confusing --

Q You may think so --

MR. REARDON: May he answer, please, first?

MR. WALKUP: I don't mind him answering, but I

will do my thinking. You do yours.

MR. REARDON: Your Honor, I agree with that. I think that is fair. But let's hear the answer first.

A Can I put it on the board so there will be no --

Q Put it on the board. We'll get there eventually.

THE COURT: We are going to conclude at 1:30. The jurors have been here since 10:00.

A The shape of a piece of material is not -- everything else being equal -- is not the determining factor of its strength. The only determining factor is the cross section of this material.

In other words, if I have a round piece, let's say, of 1 inch in diameter, and if I have a square piece of 1 inch dimension, the bar is more strong than the round, very simply because it has an additional amount of cross-sectional area at the corners.

Q Well, that sounds reasonable to me. A 1-inch bar of steel or a 1-inch round bar of steel, if it's good-quality steel, and I guess good-quality steel is available in manufacturing latch systems?

A Yes, sir. All steel used in structural systems of this type should be good commercial-grade steel.

Q All right. Have a seat.

What I'm saying is, whether it is a bar or

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whether it is round, if it's good commercial steel it can take quite a beating before it will fail and pull apart, as you have shown us on that pintle hook, right?

A To the extent of its elastic limit. There is the determining factor. In other words, if you have, let's say, 1-inch cross section, regardless of the shape, it can be oval, it can be round, it can be hollow, it can be anything, as long as you have one square inch of cross-sectional area, and if you assume that this material has 90,000 pounds per square inch strength, which is the plastic limit, then regardless of the shape that material will take 90,000 pounds before it is damaged.

Q All right. And you are talking about on it as the structure and not on some other part remote from there; right?

A I was talking about the strength of the part.

Q Okay. I accept that. I want to thank you, and since my time is running out -- I may be through here in just a moment.

THE COURT: I don't mean to curb your cross-examination. If you want the witness back, to be brought back -- I am simply saying we are sitting until 1:30. The jurors have been here without lunch.

MR. WALKUP: I understand.

THE COURT: As a matter of fact, I suppose there is some redirect, too.

MR. REARDON: I don't know. If Mr. Walkup stops, in the interests of my own elasticity I may stop.

(Pause.)

MR. WALKUP: Just one last thing. I think this is about a one-minute subject.

Q You talked about the payload on the trailer. May I inquire what payload you were talking about in this accident?

A The hypothetical question related to a 4,000-pound trailer, or a body attached to the chassis.

Q What does the word "payload" mean?

A Payload means a weight or a load.

Q Doesn't payload mean the cargo that is being carried on a vehicle?

A Yes.

Q And do you realize now that there was no cargo on this vehicle and when you were talking about payload it was an empty little trailer?

A Well, again, the term payload perhaps is misused. Basically, I was told that there was a 4,000-pound trailer attached to the frame, and this is what has been referred to as a trailer, the payload, or you can call it

the body or the trailer or anything.

Q An empty trailer is a payload?

A It is 4,000 pounds whether it is empty or full. I don't know what it was.

MR. WALKER: I'll stop now.

MR. REARDON: I have no questions.

MR. SCHWAB: I have thirty seconds, and my watch says I will finish by 1:30, your Honor.

FURTHER CROSS-EXAMINATION

BY MR. SCHWAB:

Q You have been consulted, your company, I gather, in about two or three cases by Berman & Frost over five or six years; is that a fair enough statement?

A Over about eight years.

Q You have never testified for Berman & Frost, to your knowledge; is that correct?

A No.

Q You have testified against Berman & Frost on various occasions, representing adverse parties; is that correct?

A Yes. We would testify as to any of our studies and findings whenever we are called upon to do so.

Q And on the occasions that I have had occasion to see you, be it in a courtroom or outside or elsewhere,

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and on one occasion when you were consulted I remember speaking to you in person, I address you as Dr. Morfopoulos; is that correct?

THE COURT: Is that a question or a statement?

Q Is that correct?

A Yes.

Q I don't call you Vassilis and you don't call me --

THE COURT: Your thirty seconds are up unless you want the witness because I have a question to ask him.

I want to make sure I understand the expression of your opinion in this case. In substance, I am trying to put it very simply, your opinion is that the impact in this case of the rear right wheel coming in contact -- the impact upon the curbstone or the median was so great that it released this kinetic energy which you put at 580,000 foot-pounds, as you term it.

THE WITNESS: And that,as a result, every component part of the latch system was affected and the latch itself was disengaged.

THE WITNESS: No, not the latch system. In fact, nothing has happened to the latch. But the entire vehicle was twisted out of form permanently.

THE COURT: And what did that do as far as the latch was concerned?

THE WITNESS: Well, what that did was physically to stretch the cab. The latch was a powerless element in the whole process. The latch did absolutely nothing. There are no forces in the latch, because the door hits the frame over the top striker. But when this cab stretches out and deforms, you know, opens up like that (indicating), then there is nothing to restrain the door.

Now, the latch has nothing to do with restraining the door. The latch just simply closes the door.

THE COURT: Also, is it your opinion that this would have occurred no matter what kind of a latch system --

THE WITNESS: Absolutely.

THE COURT: -- was in effect or was installed on this truck?

THE WITNESS: The latch would be just a bystander.

THE COURT: You say it doesn't make any difference what type of lock was on it?

THE WITNESS: No, sir.

MR. WALKUP: Well now, with all due respect, that opens up a --

THE COURT: You are entitled to have him back. I am trying to clarify this for the purpose of the jury's consideration. This is a very vital issue in the case, is it not, gentlemen?

MR. REARDON: It certainly is, your Honor.

MR. WALKUP: Yes.

THE COURT: That is Mr. Reardon's contention, as I understand it. He is saying, in effect, it doesn't make any difference what the state of the art was, it wouldn't make any difference what latch system was in there.

Is that correct?

MR. REARDON: Your Honor says the state of the art. I think you misrepresent --

THE COURT: Leave out the state.

It doesn't make any difference what type of latch system was in that truck.

MR. REARDON: The gigantic forces that we have been discussing --

THE COURT: That is exactly why I am pinpointing the question for the jury.

You may have the witness back if you want him. It is a very important element in the case.

MR. WALKUP: I think, your Honor, that he has already answered that he made no studies of other types

of locks.

THE COURT: I am simply saying to you, if you do want him back, you are entitled to have him back.

MR. WALKUP: I'll let his counsel no this afternoon.

THE COURT: You are entitled to have him back if you want him.

MR. WALKUP: Is it agreeable if I let --

THE COURT: There will be no problem about your returning here tomorrow morning?

THE WITNESS: No particular problem.

MR. WALKUP: I want to read over what he said on that subject.

THE COURT: I kept you a few minutes longer. Have a good day. I am going to be sitting again in about thirty minutes, so I want to get some lunch in between.

Good day, all. Tomorrow morning at 10:00 o'clock.

(The jury left the courtroom.)

(Adjournment taken to Wednesday, March 13, 1974, at 10:00 a.m.)

* * *

MR. WALKUP: After it came out of this field and these mechanics brought this part of it--

Q They brought it back to your shop?

A Yes.

THE COURT: That was in preparation for transporting it to York?

THE WITNESS: Yes.

MR. SCHWAB: To transport the vehicle, your Honor.

THE COURT: What did I say?

MR. SCHWAB: I don't think the tire and wheel was ever brought there.

THE COURT: I was referring to the entire vehicle.

Q Can you tell us in lay terms and realizing that we are not tire experts, although we are learning a lot about tires, what the problem was with getting that tire off of the rim in your shop?

A It was forced on very tight over the hub and we could not break it loose and we had to take a torch and burn one spoke out of the hub to relieve it so we could get the rim and the tire off the hub.

Q Would it help you to explain to us to actually have that tire, which is in the next room, to show where the

* * *

before Taylors Mills Road, I believe it is?

A Yes.

Q And would you tell us what measurements you took at that location, please?

A Well, I measured the cross dimensions of the road, the lane width and principally the median width, and also the height of the curbs.

I observed the general nature of the median, the ground on it, and the drainage aspects of the northbound roadway, and I looked for scars on the east median curb.

Q Now, did you take measurements of the curb of the median at different locations?

A Yes. At about 10-foot intervals for perhaps 100 feet, or 80 feet, from the vicinity of where the accident appeared to have occurred, based upon the photographs that we had with us.

Q What was the height of this median?

A Pretty uniformly 9-1/2 inches.

Q Now, with regard to the width of this median divider between the north and southbound lanes, how wide was that median as you measured it, please?

A The median is 16 feet wide, curb face to curb face.

Q And you spoke about drainage ditches. Where

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question with a reasonable degree of certainty?

THE WITNESS: Yes, I think so.

THE COURT: Then answer it.

A Well, that the door was permitted to open.

Q Now, sir, I want to ask you a question on a different subject if I can find it in my notes, and then I think that's it.

THE COURT: Before we leave that subject, I have a note from one of the jurors, which is as follows:

"What kind of lock did the Pitman cab have?"

Nof, if you gentlemen can agree upon it, you can state the answer.

MR. WALKUP: First let me ask this witness that question:

Q Do you know, sir?

A Do I know what?

Q What his Honor just asked.

THE COURT: What kind of lock did the Pitman cab have?

THE WITNESS: You mean the auxiliary cab?

THE COURT: Yes.

THE WITNESS: I have no idea.

MR. REARDON: I don't think counsel knows, either, your Honor. I would be happy to answer it, if I could.

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I think Mr. Walkup would, too.

MR. WALKUP: Oh, I know what kind it is. I have sat in it.

THE COURT: You had better check first with counsel and don't make any statement about it; otherwise we will take testimony on it.

Q Your deposition was taken in this case back in February, February 13th of 1974, here in New York City, and at that time Mr. Hirschhorn, my associate, asked you one question at Page 77, as follows --

MR. REARDON: Would you give us a moment, please?

MR. WALKUP: Let me withdraw the question and I will ask this question.

Q I ask you to assume -- and I think you have already assumed it -- that this vehicle had super single 18 X 22.5 flotation tires in the rear, rather than the standard dual 10.00 by 20's. What is your opinion, under the facts of the case as you knew them February 13, 1974, as to what a change in the size of the tire from the duals to the super singles would have in this case, insofar as the toppling over effect is concerned?

MR. SCHWAB: I object to the form of the question.

THE COURT: Overruled.

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You argue that to the jury.

MR. REARDON: My point is a little bit different. I agree with everything that your Honor said. I want to prevent the plaintiffs from arguing that it is their position that inadvertent door opening is -- if it is a possible cause -- our responsibility because they have never suggested that the design of any part of that latching mechanism brought about this inadvertent opening.

THE COURT: No. I will tell you what I have in the charge as I remember it:

That with respect to the claim which is directed solely against your client, that there was a design defect, that there is no claim -- unless counsel correct me -- that there is no claim that it was defectively constructed or manufactured. That is the latch itself.

The claim is that it was designed in such a way that it was not reasonably fit, in the event of an accident, to minimize unreasonable risk of injury to a plaintiff. And I think that states what the theories are in the case and what the applicable rule is under the Larsen case.

MR. REARDON: May I leave this with your Honor?

* * *

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is making against the system. Page 1118, cross examination by mr:

"Q Do you recall yesterday testifying that in your opinion what caused this latch mechanism to separate, the door to open, was a rather nominal impact? Do you remember that?

"A Yes."

Now, I would like to look at this nominal impact because I tell you right now, ladies and gentlemen, that if that door opened as a result of a nominal impact, then my client should absolutely be held responsible here. That door should not open on a nominal impact. It is not designed to do that. It is designed to hold under impacts that you would expect.

So I tell you in all frankness right now that if in your deliberations you conclude fairly on this evidence that that latch opened with some kind of a nominal impact, my client is responsible here. It shouldn't have opened that way. But let's look at exactly the way it did open.

Mr. Hirschhorn provided some answers to interogatories in this case that I read to you during the course of the trial itself where he described for us what happened here. We are allowed to ask him questions, and this is part of his answer:

* * *

take a minute to do that.

We have a 28,000 pound truck, 14 tons, six men in it, winches, tools, pulling a three to four thousand pound trailer unloaded, trailer unbraked, going a minimum of 25 miles an hour on a hazardous and icy road, winds better than 25 miles an hour, the driver on the job twelve days, 20 years old, never driven the truck before, no prior training, no emergency situation.

I say never driven the truck before. Sure there is some dispute about that. But the dispute is between Mr. Burlew and everybody else at Jersey Central. He is the only one who seems to say that he had driven that truck before. No one else ever remembers him doing it.

And then we get into the question of whether or not there was some union rule that forced him to do this on this tragic occasion, and there was some testimony about it the other day, and I am going to take the liberty of reading Mr. Conroy's cross examination to you, if I may, page 503:

"Q Dave Burlew was a utility worker, is that not correct?

"A Yes.

"Q Sometimes you do let a utility worker drive the truck, don't you?

"A When there is no truck driver, the utility driver

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was totally out of control and it whips around in a counter-clockwise direction, with the trailer behind, the additional rotational force, it smacks into this 9 and 1/2 inch curb, the air goes out of the tire, there is gouging of concrete out of that curb into the rim, leaving the damage we see here, the thing goes diagonally across the median divider, dragging and gouging in the grass, and turns over.

And then we are talking about a nominal force. And who computes for us this nominal force? You may remember I asked some questions of Mr. Severy about kinetic energy and all sorts of things like that. Well, thanks to Mr. Schwab, I must say that in the course of his cross examination he asked Mr. Severy to compute it. 580,000 foot pounds of kinetic energy is what you get with a 28,000 pound truck going 25 miles an hour into that curb with the right rear tire.

Now, after Mr. Severy told us about 580,000 pounds I think he was impressed by it himself because he didn't suggest after that that this was a nominal force. Mr. Walkup, taking him on redirect examination, didn't say: Well, now, Mr. Severy, you say it is a nominal force. Could you tell us how you explain 580,000 foot pounds of kinetic energy with your explaination of a nominal force?

That question wasn't asked, you know, you can't contradict laws of science. No expert can do that. No one is

that glib and that bold, to stand before you and try and contradict laws of science, and Severy wasn't. But if there is any doubt in your minds about how severe that impact was, again let's look at some hard evidence.

Do you remember Mr. Reilly? He was the foreman for Jersey Central and he was the fellow who got to the scene and followed the truck after the accident back to the Farmingdale yard, and sometime after that he said they wanted to get that rear tire off because it had been banged up and they were going to ship the truck out to York, Pennsylvania, to Pitman's place of business.

And he sent two men over to Farmingdale to get that tire off and get it changed, "Get it fixed so we can move this truck." These two men call him up and they say, "Vince, we are banging this thing and prying it. We can't get it off. There is no way we can get this off manually."

So he says, "Tkae the whole thing, the brake and everything. Take the whole kit and kaboodle back to Allenhurst, to our garage," and that's what they did do, and they burn it off there. They literally have to burn it off with a welding torch because the lugs on that wheel, and there are five of them, rammed back into that rim. This is a cast iron steel wheel with five spokes, rammed into that rim as a result of that impact, called a nominal impact by Mr. Severy.

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Even more relevant, however, to the kind of force that was received in this accident and how it was transmitted not just to that right rear tire but to the entire chassis of this truck, is what happened after this accident in terms of the salvaging of this vehicle.

And we know in evidence there is a repair order that we put into evidence as General Motors' Exhibit A. What happened is that Jersey Central wanted to find out if they could repair this vehicle and what it would cost, because it had $40,000 invested in this, just about, 26 to Pitman, 7,300 to General Motors, 4,000 to Hendrickson, almost $40,000.

And they sent around appraisers, estimators, to find out what it is going to cost, and they find out that the entire frame, the whole chassis, has to be replaced, it can't be repaired. The everity of that impact was so great that the entire chassis had to be replaced.

I would ask you to look at this, if you're interested, in the course of your deliberations to see the magnitude of the damage. I'm not talking about sheet metal damage that you can legitimately say happened in the turn over. I'm talking about damage to the superstructure of that vehicle which can only legitimately be attributed to this 580,000 pounds of force.

Now, let me digress again for a moment. Jersey

Central had this truck, Pitman had the; truck, everybody had the truck but nobody ever said General Motors had a shot at this truck before it got sued in March, 1971. They measured it, had their experts look at it. We never got a shot at that truck. You saw one picture of the truck when we got to it, stripped down, the whole body gone, the door gone, the man cab door gone. We never got a shot at that truck ourselves and nobody ever suggested, until we got sued in this case in March of 1971, that we had done one thing wrong, that our dealer had sold them a lemon, that there was anything wrong with that door, any instability of any kind that was our responsibility.

But we are an ideal defendant in any case, let me tell you, because we are a target defendant, and I think that we are, because we make mistakes, we do make mistakes, like every body else, but we didn't make one here, and that's what I'm asking you to find.

Now, why do they say nominal forces? Why should that be the position of an expert in the case? I mean he's got all this damage. Why does he say nominal force? In thinking about it, the answer becomes very obvious. Because if he said, in this direct testimony, this wasn't a nominal force, this was a gigantic force, a super force, if he said that, he would be admitting the very reason why this door

opened and why it is not the responsibility of my client.

Because it was a super force. It was not a nominal force. And it takes a super force to get this door opened under these kind of conditions.

You never heard any member of the crew suggest that this was a nominal force that dumped those six men over that day. They dare not ask that of the crew, because it wasn't that and they won't get the right answer. But Mr. Severy, to provide the technical leverage to make a case against General Motors, is prepared to say a nominal force. Well, it just isn't so.

Now, one more thing about Mr. Severy at this point which I think graphically demonstrates why his testimony should not be believed by you. You may remember that he suggested that on the face of this striker, and you do see things on that striker, and I would like you to look at that striker when you get a chance in your deliberations, he said that is the objective finding of these forces that pushed that striker and the rotor away from one another during the course of the happening of the accident.

So I say: Would you be so kind, sir, as to show the jury by marking on these two Ehrlich photographs where these forces are apparent? And he has the gusto to draw arrows about where he sees these marks on the striker as

* * *

I also know that jurors are intelligent, and I would not try to tell you that there wasn't a big force that hit the right rear wheel of the truck. It was 580,000 foot-pounds, which means one pound to be lifted one foot. It doesn't mean that you take a 580,000 hammer and hit that.

It was a big impact, and nobody is debating that. But trucks and London buses, and tankers, and big moving vans, are designed for big forces.

You know, we are talking here about a truck going 25 miles an hour that hits an object. I have seen Greyhound buses out in California pass me when I was going 65, and I felt like I was standing still. YOu have seen big rigs go down the highway at hight rates of speed. Think of the kinetic energy that's involved in those trucks.

They are going to hit bumps, and they are going to hit various things, and they are going to be twisted and turned. And you come up to wrecks after they have happened with automobiles and trucks; how frequently do you see a door pop open? They are designed to withstand the type of forces we are talking about here.

Now, I will be the first to concede that if you took this latch -- and incidentally, this latch is not damaged at all. Do you know that there are no broken parts,

* * *

and decide the case without considering the whole thing.

Now, if you will pardon me, you know, it is a big responsibility to represent somebody in the condition Dave Lane is in. I may offend you in some way by talking too much. I may offend you in some way by criticizing some of the experts on the other side. But please, if I do, don't take that out on Dave Lane or his wife. I am doing what I conceive to be my duty and I am trying to call a spade a spade here so there will be no miscarraige of justice.

Because I am biased, I am an advocate, I am fighting for Dave Lane and his wife, and I am trying to make sure that you get the whole picture, and that you don't overlook the basic instability of this vehicle, that you don't overlook the fact that it would tip more readily under the circumstances of the vehicle, and I am trying to make sure that you thoroughly understand that it is not a big deal for General Motors to make a latch like others, make it that you can't open.

And I'm not saying they have to make a latch which could stand 580,000 pounds of pressure right on it, but I say that in that wreck, and as Professor Severy said, in that wreck this type of latch, the encapsulated kind, has the strength to withstand the forces which were exerted on it, and this latch that was there isn't even bent or modified in any

* * *

AFTERNOON SESSION

2:15 p.m.

(In open court; jury present.)

CHARGE OF THE COURT

THE COURT: Members of the jury. We are now at the stage of the trial where you are soon to undertake your final function as jurors, and that is to decide the fact issues in the case.

At the start of the trial, I told you that in the preparation for this final duty it was not only important to listen carefully to each witness as he testified, but also to observe his manner of testifying.

Despite the fact that this trial took somewhat longer than anticipated, and at times involved technical matters and terms beyond the ken of the average person, it has been evident to me, as it has been to counsel, who commented upon it during their summations, that your interest never waned, that each witness had your keen and undivided attention, and that you are fully prepared to discharge your final function.

You are the sole and exclusive judges of the fact. You pass upon the weight of the evidence; you determine the credibility of witnesses; you resolve such differences as there may be in the testimony; and you draw

whatever reasonable inferences may be warranted from the facts as you determine them.

My task at this point is to instruct you as to the law. It is your duty to accept these instructions of law and to apply them to the facts as you may determine them.

In your determination of the facts, you will rely upon your own recollection of the evidence. What counsel may have said from time to time during the trial proper, such statements of fact as may have been included in questions of counsel, statements of fact made during the course of their summations, are not to be taken in place of your own independent recollection of the evidence.

So, too, anything the Court may have said during the progress of the trial, or may say during the course of these instructions with respect to any fact, again, is not to be taken in place of your recollection of the evidence. That governs at all times.

Before we consider the principles which apply to this case, a preliminary observation is in order to emphasize your duty as jurors to decide the fact issues fairly and objectively. There is no doubt that the plaintiff, David Lane, sustained severe injuries and was rendered a paraplegic, disabling him for the rest of his

life. Yet that doesn't mean that he automatically is entitled to a verdict. However much we may sympathize with him or his wife, who also seeks recovery of damages, he is not entitled to a recovery against the defendants unless, just as every other plaintiff who brings an action, he meets the burden of proof which the law imposes upon him as I shall define it in these instructions.

As jurors, you play a most important role in the administration of justice. Your oath is to render justice fairly and impartially, without fear or favor, without regard to who or what the parties are, and solely upon the evidence or the lack of evidence, and in accordance with these instructions of law.

The glory of our system of justice is that all parties, individuals, corporations, and, indeed, the Government of the United States of America, stand as equals at the bar of justice. Justice cannot prevail if sympathy, prejudice or bias enter into your deliberations. I have every confidence that, in the discharge of your final duty, you will live up to your sacred oath as ministers of justice and, as counsel for the plaintiffs and defendants themselves indicated, they would not have it otherwise.

A further preliminary word: Since the accident

occurred in New Jersey, the law that will be applied is that of the State of New Jersey, even though the case is being tried in this federal court. It is here because litigants of different states have a right to try their cases in the federal courts.

The issues in the case have been somewhat narrowed since the start of the trial.

You will recall that I then mentioned plaintiff was seeking to recover damages upon several different theories of law. The plaintiff now confines his claim against the defendants upon what the law generally refers to as a manufacturer's strict products liability. This involves no concept of negligence. Generally stated, when a manufacturer puts into the public market a product which he manufactures, designs or assembles, and which is defective, that is, one not reasonably fit for its intended purpose or use, and such defect is a proximate cause of damage or injury to a person, the manufacturer is held liable for the resulting damage.

Lane sustained his injuries on February 4, 1970, while seated in the front right seat of the cab of a vehicle owned by Jersey Central Power & Lighting Company by which he was then employed as a lineman. The truck was ordered by Jersey Central through General GMC Sales, Inc., of

Bradley Beach, a General Motors authorized dealer. As ultimately delivered to Jersey Central, it was the product of the two defendants, General Motors and Pitman Manufacturing Company, and also of Hendrickson Manufacturing Company.

The chassis and cab had been manufactured by General Motors at its factory in Michigan. The chassis was then modified when Hendrickson installed special equipment, consisting of a Colman front axle and super single or flotation tires.

Pitman, thereafter, installed a boom and derrick and rear cab on the chassis. The truck was received by Jersey Central on June 2, 1967. Plaintiff seeks to hold each defendant liable under the strict products liability concept.

His claims fall into two categories:

First, he seeks to hold them liable on the ground that the vehicle was unstable and top-heavy and that the instability was the cause of the accident.

In addition, he advances a second or separate claim solely against General Motors.

In this instance, he contends that even if you should find that neither defendant is liable upon the claim of instability, General Motors is nonetheless liable

on the ground that the door latch system of the front right door was defectively designed. In essence, the doctrine here is that it is readily foreseeable that accidents do occur and are incidental to the normal use of an automobile.

Consequently, the law imposes a duty upon the manufacturer of a truck to use reasonable care in its design to avoid subjecting the user or passenger to an unreasonable risk of injury in the event of an accident. And, if an accident does occur and injuries are enhanced by the manufacturer's breach of its duty, it is held responsible for the resulting injuries.

Each defendant denies the plaintiff's claims as asserted against it. Each contends that no act or conduct on its part caused or contributed to the accident; that it was due solely either to the driver's conduct or hazardous conditions on the day of the accident. Moreover, each defendant contends that, even if you should find it breached a duty owing Lane, that he, by his own lack of care, contributed to the injuries which in any event would mean the damages should be reduced accordingly.

As I have already told you, the fact that an accident occurred does not entitle him to a recovery upon any of his claims. Neither defendant was an insurer

of Lane's safety. It may be held liable only if plaintiff sustains its claims. He has the burden of proving them by what the law terms a fair preponderance of the evidence.

To establish by a fair preponderance of the evidence means to prove that something is more likely so than not so. In other words, a preponderance of the evidence in the case means such evidence as, when considered and compared with that opposed to it, has more convincing force and produces in your minds that what is sought to be proved is more likely true than not true. It really goes to the quality of the evidence rather than the number of witnesses who were called to testify. It means that the person who has the burden of proof presents evidence more convincing and persuasive than that opposed to it.

Now, perhaps an example will give you a clearer idea of what we mean by the preponderance of the evidence. Assume as you are going over the evidence in the case that you have before you an apothecary scale with its two receptacles on each side. And when you come to evidence that you are satisfied is credible and believable, and supports the plaintiffs' side of the case, you place that testimony in the plaintiffs' receptacle. When you reach

evidence that you believe is persuasive and credible on the defendants' side, you place it on the defendants' side of the receptacle. And you do this until you have examined all the evidence in the case.

If, at the conclusion, the scale is weighted or tilted in plaintiffs' favor, no matter how slightly, then he has sustained his burden of proof by a fair preponderance of the evidence. If the receptacles of the scales are in balance, then he has failed, and obviously, if it is tilted in defendants' favor, again he has failed.

Now, in determining whether, in fact, an issue has been proved by a fair preponderance of the evidence in this case, you may, unless otherwise instructed, consider the testimony of all witnesses regardless of who may have called them, all exhibits received in evidence, regardless of who may have produced them, and all facts which may have been admitted or stipulated, and all facts and events which may have been judicially noticed.

Also, I have already instructed you, that the answers to interrogatories which were read in evidence, are also part of the evidence. Any answers ordered stricken by the Court must be disregarded.

There are, generally speaking, two types of

evidence from which a jury may properly determine the facts of the case. One is direct evidence, such as the testimony of a witness as to what he saw or heard. The other is indirect or circumstantial evidence, proof of circumstances from which inferences can fairly be drawn in terms of common experience.

The law makes no distinction between direct and circumstantial evidence, but simply requires that the jury find the facts in accordance with the preponderance of all the evidence in the case, both direct and circumstantial.

Fact finding does not require mathematical certainty. You are permitted to draw from facts you find have been proved such reasonable inferences as seem justified in the light of your experience.

Inferences are deductions or conclusions which reason and common sense lead the jury to draw from facts which have been established by the evidence in the case. However, inferences cannot be based upon speculation or conjecture.

I have made a reference to circumstantial evidence. Perhaps, again, an illustration will more clearly convey to you what is meant by it. Now, this was a sunny day, as we entered the courthouse. It was a clear

day. And assume, as you came into this room, those venetian blinds were drawn, and over the venetian blinds there were drapes. Now the result of that would be that you could not look outside, as you can right now and you can observe the atmosphere and weather conditions. Now, bear in mind the venetian blinds are closed, the drapes are drawn over them, and you cannot look outside. Say we have been sitting here about an hour and the door opens, somebody walks in with an umbrella that is dripping wet. In a short while, he is followed by a person wearing a raincoat that is wet. In a little while, say, you hear a pitter-patter against ehw indow sills.

If I asked you directly, "Can you tell me the weather outside?" Bearing in mind that it was a clear, sunny day when you entered, you couldn't give me direct evidence of that because you cannot look outside and observe the weather conditions. But I think you would agree that because of the three circumstances I referred to, although it was a clear sunny day when you entered, you would be justified in inferring that it was raining outside, that is about all circumstantial evidence means. You reason from one established fact to another.

Now, let us consider the contentions of the parties with respect to the facts of the occurrence.

Counsel for each litigant, in his summation, has reviewed the evidence in detail, and so my reference will be in broad outline, and is not intended as a detailed analysis of all the evidence or of each witness' testimony. Its purpose is to set the framework against which you are to consider the issues and to decide whether plaintiff has sustained the essential elements of his claims against the respective defendants. You, of course, are to consider all the evidence in the case.

Plaintiff contends that from the time Jersey Central received the truck on June 2, 1967, to the time of the accident, that it was defective in design or manufacture in that it was unstable and top-heavy, and that each defendant, to the extent that it played a part in its manufacture, contributed to the defect.

To support this aspect of his claim, he relies upon his own testimony and that of fellow employees. Their testimony, in substance, was to the effect that the truck, when driven on the highways or on the back roads, swayed or rocked from side to side, that it was unstable and top-heavy. In addition, plaintiff essentially relies upon the testimony of Derwyn M. Severy, a research engineer specializing in crash studies, who gave an opinion supporting plaintiff's claim of instability. His view was

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that the vehicle's center of mass was excessively high, that the location of the principal load behind the rear axle wheel affected the center of gravity, that the boom should have been lower down, that the rear tires, which were placed inboard, increased the tendency for instability, that these and other factors contributed to the instability of the vehicle.

As to General Motors, the claim centers about the special equipment modification made by Hendrickson. I charge you that General Motors is accountable for the special equipment modification, even though it was performed by Hendrickson.

Plaintiff contends that the chassis, as modified by Hendrickson and then delivered to Pitman, was not adequate on which to install the superstructure -- essentially, this relates to the claimed narrowing of the rear axle.

As to Pitman, the claim rests on plaintiff's experts' opinion that the position of the boom on the vehicle and the other factors referred to by him contributed to or increased the vehicle's instability, and, further, that good practice required Pitman to have evaluated the product before its release to the public to ascertain that it was reasonably fit for use.

Thus, plaintiff claims that each defendant played a part in producing an unstable vehicle, one that was defective, and that this defect was the cause of the accident and the roll over of the truck.

As to the claim against General Motors with respect to the latch system, plaintiff's principal reliance is upon the testimony of Severy and that of another expert, I. Robert Ehrlich. The substance of their testimony is that the door popped open during the accident because the latch had a basic defect in design. Basically, their views were that the nominal force, together with the twisting, which resulted when the right rear tire struck the median, caused the latch mechanism to separate and to open the door; that it failed because it was not encapsulated or did not have the so-called anti-burst features, that had the system had such restraints, the latch would have held in the turnover.

Each defendant challenges plaintiff's claims. Thus, as to the claim of the latch or the latch system, General Motors offered the testimony of Dewane Forester, Assistant Chief Engineer of General Motors Truck and Coach Corporation. He challenged plaintiff's experts to the effect that the latch system was so designed that nominal forces such as came into play during the course

of the truck's mountin g the median curb caused the system to unlatch. Mr. Forester's view was to the contrary. He had two theories as to the door unlatching; one, that there was a severe deceleration of the vehicle causing Lane and other occupants of the cab to be justled about, and in the process, Lane struck the door handle inadvertently; or, two, that the vehicle was subjected to extremely high kinetic energy much beyond that which the vehicle was designed to withstand, and that the extreme overload forced the door open.

Vassilis Morfopoulos, another expert witness, supported Mr. Forester's position, that powerful kinetic forces came into play in consequence of which the latch was stretched beyond capacity and came apart. He also agreed with Forester's view that this would have occurred no matter what type of latch was on the truck.

As to the claimed instability, General Motors relies upon the testimony of, among others, Charles L. Small, Hendrickson's director of engineering. He testified that it was Hendrickson's usual practice to mount the front and rear tires in alignment, or, as he termed it, so that the rear tires were tracking the front.

General Motors also relies on certain documentary

exhibits which it contends showed that the rear wheels were mounted 95-1/2 inches apart further outboard than the front wheels when the vehicle left Hendrickson and was delivered to Pitman.

That wouldn't be 95-1/2 inches apart further outboard than the front wheels. That part is a mistake. They were mounted 95-1/2 inches apart outboard. Thus, General Motors claims this aspect of alleged instability cannot be attributed to it.

The defendant Pitman called witnesses who also sharply disputed material testimony of plaintiffs' experts.

Jack E. Stilwell, its director of engineering, testified the chassis as received by Pitman from Hendrickson complied with or exceeded its minimum specifications, also that a single 18 X 25.5 tire was adequate and it was equal to two 10 X 20 tires.

He also challenged Severy's opinion that the boom should have been welled further down.

In Stilwell's opinion, there was no defect in the equipment as installed on the chassis or in the design, that it was a well-balanced installation for this type of equipment, that it was fit and suitable for the purpose intended.

He also testified that Pitman usually doesn't remove tires or axles when equipment is mounted. Moreover, even if the rear tires were put on one way or the other, and closer to the rail frame by 5-1/2 inches, it would make no difference in the truck's stability; in sum, that it was a stable truck under all the conditions.

James Stannard Baker, another witness called by defendant Pitman, also took issue with plaintiffs' experts. He denied that the turnover of the truck was due to any instability. In sum, in his view, the existence of the boom, whether the superstructure were higher, whether the tires were single or double, or whether they were inboard or outboard, wouldn't have made any difference -- the accident, under the prevailing conditions, would have occurred and the truck would have turned over.

Moreover, insofar as plaintiff and fellow employees testified that, when used, the truck swayed, Baker denied this was due to any unstable condition.

Against this broad background, we consider the respective claims of plaintiff and the essential elements that he must establish by a fair preponderance of the evidence if he is to prevail.

First, as to the claim of instability of the vehicle. A product may pass through, be processed, assembled

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or manufactured by a number of persons before it is completed and reaches the ultimate consumer, and each person who may have contributed to a material defect may be held liable. In effect, plaintiff here advances such a claim against each defendant.

In order to prevail, he must establish as to what defendant, (1) that a defect of design or manufacture existed in the construction of the vehicle, that is, that it was not reasonably safe for its ordinary or intended use or purpose; (2) that such defect existed at the time the vehicle left the control of the defendant.

In the instance of General Motors, I have already instructed you that it is chargeable with the special equipment changes made by Hendrickson. In the instance of Pitman, this would refer to the equipment or the manner in which the equipment was installed on the chassis.

(3) that such defect was a proximate cause of the accident and the injuries sutained by the plaintiff.

By proximate cause is meant that the defect was a substantial factor in bringing about the accident and a factor without which the accident would not have occurred.

It need not be the only cause of the accident, or even the dominant cause, for the law recognizes that

there may be more than one proximate cause of an accident.

When two or more persons are under a duty to perform an act, such as to market a product that is reasonably safe for its intended use or purpose, and each breaches that duty with respect to the product, but in a different manner, and such breaches concurred and united together in proximately causing an accident and injury, then each is subjected to liability.

Thus, if you find that the separate acts of each defendant, while the vehicle was under its control, resulted in a final product, not reasonably safe for use when it was delivered to Jersey Central, and such concurrent acts proximately caused the accident and plaintiff's injury, each is liable, regardless of the relative degree in which each contributed.

If you find that either or both defendants' conduct was a proximate cause of the occurrence, it is not a defense that the conduct of some other person not a party to this action, for example, that of the driver of the vehicle, also may have been a cause of the accident.

However, if you find that the sole and only proximate cause of the occurrence was the conduct of someone not a defendant, then plaintiff cannot prevail and your verdict should be for the defendant.

The proof as to proximate cause may not rest on any speculation as to the way the accident occurred. You cannot infer from the mere overturning of the vehicle that it was defective. If you cannot determine the cause of the accident, or you find that there are equal probable causes which cannot be attributed to a defendant, then the plaintiff will have failed to sustain his burden of proof as to that defendant.

However, plaintiff does not have to establish the precise defect that caused the accident. The proof may be circumstantial.

It is sufficient if, from proof of established facts, it may reasonably be inferred that the vehicle was defective and that such defect was a proximate cause of the accident. However, again, if you cannot attribute such defect to a particular defendant, that defendant may not be held liable.

Now let us turn to the plaintiff's additional claim which he advances solely against the defendant General Motors, which relates, as you know, to the latch system. Under this claim we are not concerned with the accident itself, or whether or not either defendant or any other person was responsible for the occurrence. Indeed, this claim recognizes that accidents do occur and are

foreseeable. As I have already mentioned, plaintiff here contends that even if he should fail to sustain the claim of instability against either or both defendants, nonetheless, he is entitled to recover against General Motors because, as he claims, the latch failed to hold during the roll over.

He does not contend there was a flaw or defect in any of the physical parts of the latching mechanism or its manufacture.

What he does contend is that the system was so designed that in the event of an accident it was not reasonably fit to avoid increased injuries-- that the failure of the latch to remain in its locked position during the turnover of the vehicle caused him to sustain injuries he would not otherwise have received or that his injuries would not have been as severe.

Here plaintiff argues that a reasonably safe and available latch was the so-called encapsulated or anti-burst latch, and had one been installed, then under the conditions of this accident the door would not have opened, which, as you know, is disputed by the defendant.

The duty imposed upon a manufacturer, which I have referred to, to market a product designed to avoid unreasonable risk of injury in the event of an accident, does not mean that General Motors was required to design

an accident-free or crash-proof truck or latch system. The standard imposed is not absolute perfection, but a design reasonably adequate to avoid increased risk of injury.

Thus, to sustain this claim against General Motors, plaintiff must establish by a fair preponderance of the evidence, one, that the latch system was defective in design, that is, that it was not reasonably fit to avoid increased risk of injury in the event of an accident; two, that such defect was a proximate cause of injuries over and above those that plaintiff probably would have sustained absent the defective design.

Both elements of this claim, whether the latch system was defective, involved technical physical and scientific matters and the alleged increased injuries, particularly the spinal injuries resulting in plaintiff's paraplegia, are the subject of sharp and conflicting testimony by the medical and other experts called by the parties.

It may seem strange to you that where those specially trained in such fields are in sharp disagreement that you, as laymen, are called upon the resolve the issue. But that is your function, since these do concern fact issues.

As to the claim of increased injuries, I shall again refer to this in instructing you on damages in the event you reach that issue.

Out of the mass of testimony, so much of which is in conflict, you are called upon to decide whether plaintiff has sustained his burden of proof as to any of his claims.

You will necessarily have to appraise the credibility of the witnesses who appeared before you. How do you evaluate the testimony of witnesses, lay and expert? And again, I call your attention to what I instructed you about at the very start of the trial, how important it was to observe the manner of testifying on the part of each witness, because this may give you some idea as to whether or not his testimony is acceptable or believable.

In appraising a witness' credibility, you may be guided by his appearance and conduct, his demeanor, and, as I have said, the manner in which he testified, or the character of his testimony.

In your search for the truth, you use your plain, everyday common sense. As I often say to jurors, when you walk into a courtroom, and when you sit and listen to evidence during the trial, and thereafter deliberate, you don't leave your common sense outside. It is with you

inside the jury room just as I am sure it has been with you throughout the course of this three-week trial.

Jurors are supposed to reach their conclusions on the basis of common sense, common understanding, and fair beliefs, grounded on all the evidence, direct and circumstantial.

You should carefully scrutinize all the testimony given, and the circumstances under which witnesses testified, and every matter in evidence which tends to show whether a witness is worthy of belief.

How did the witnesses impress you? Did they appear to be testifying frankly, candidly and fairly? Or did they appear to be evasive or less than frank? What degree of credence you should give a witness' testimony is to be determined by his conduct and manner of testifying, whether or not he appears to be biased or prejudiced in favor of one party or the other, whether he might be affected by the verdict.

In short, using the vernacular, you size up a witness in determining whether or not his testimony is truthful, credible, and acceptable.

You may take into account the interest of a witness. Theplaintiffs, obviously, are interested witnesses. So, too, Mr. Forester, employed by General Motors,

Hendrickson's representative and Pitman's, who testified with respect to matters pertaining to the manufacture and construction of the truck or superstructure, as to which each had some responsibility, may be considered interested witnesses.

Now, an interested witness is not necessarily unworthy of belief. It is simply a factor which you may consider in determining the weight and credibility to be given to his testimony.

The inconsistency or discrepancy in the testimony of witnesses, or between the testimony of different witnesses, may or may not cause you to discredit such testimony.

In weighing the effect of a discrepancy, always consider whether it pertains to a matter of importance or an unimportant detail, and whether the discrepancy results in an innocent error or an intentional falsehood.

If any witness -- and obviously this applies to all witnesses -- has wilfully testified falsely to any material fact, you have a right to disregard the testimony of that witness in totality, or accept only that part or portion which commends itself to your belief or which you may find corroborated by other evidence in the case.

Now, as to expert witnesses, during the progress

of the trial, I did instruct you that the evaluation or acceptance of such testimony rested with you, and that their opinions were not binding upon you. Indeed, it has been said that there are cases where common sense is more reliable than any number of expert witnesses. Expert witnesses give their testimony b ed on their professional experience and judgment, and in this case they have also answered hypothetical questions based upon the evidence in the case.

You apply the same standards in appraising the quality and credibility of expert testimony as you do of any lay witness, by judging his conduct, his appearance, his manner of testifying, and, in general, the weight or conviction that his testimony carried with you on professional matters.

Testimony read to you by way of deposition, likewise, is to be considered, although in this instance you do not have the benefit of observing the witness testifying before you. However, his credibility is to be judged in the same way as if he had testified from the witness stand before you.

You reach the question of damages only if you find the plaintiff has sustained his burden of proof upon his claims as to one or both defendants.

In the event you conclude he has not, that would end your inquiry, and of course also in the case of Mrs. Lane, and you proceed no further but return a verdict in favor of the defendants.

If plaintiff has prevailed, then the defendant or defendants, as the case may be, are liable to plaintiff for damages which flowed as a result of the defendants' conduct.

If plaintiff David Lane prevails, his wife also is entitled to a recovery of damages.

The purpose of the law is to compensate an injured party for the damages sustained as a result of another's conduct. Your award must be fair and just. It must not be excessive; neither may it be inadequate. In this, as in all matters, you will be guided by your experience and common sense.

The damage items cover different periods. There are those which you may find plaintiff suffered or incurred from the date of the accident to the present. Then there are other damages which are likely to be sustained in the future.

Thus, if plaintiff prevails, he is entitled to recover:

(1) The reasonable doctors', nursing, hospital

and other incidental and related expenses necessarily required for his treatment from the date of the accident to the present. The parties have agreed that this amount is $91,700;

(2) Future medical, surgical, hospital and other related expenses reasonably required in his further treatment;

(3) Loss of wages from the date of the accident to the present.

Here you take into account the evidence of Lane's earning capacity before the accident, and determine what he reasonably would have earned had he not been disabled. Also, you take into account the increases in wages that you find were granted to date.

(4) Future loss of wages;

(5) Pain, suffering and mental anguish already suffered by him and proximately resulting from the injuries he sustained as a result of the accident;

(6) Such pain, suffering and mental anguish as you may find he is reasonably certain to suffer in the future from the same cause.

As to the damage items, those to date are fairly calculable. As to the medical, hospital and other expenses, you have, as I have already mentioned, a precise amount which

has been stipulated.

As to the loss of wages to date, there is a yardstick based upon past earning capacity. These items and that of pain and suffering to date are to be awarded without discount.

However, the awards for future losses must be discounted at present worth which I shall presently discuss.

The award for future losses obviously turns on matters that cannot be determined with certainty or precision. How long is it likely that plaintiff will live? What is his life expectancy? How long is it likely that plaintiff would have continued to work -- his work expectancy as distinguished from his life expectancy?

Your determination of Lane's life expectancy and his work expectancy play an important part in evaluating the award for future pain and suffering and prospective loss of wages.

According to the mortality tables issued by the United States Department of Health, Education and Welfare, his life expectancy, or the life expectancy of a person of plaintiff's age is 40.40 years. I am giving it to you as of this date, since I have already indicated that any award up to date is separate.

The life expectancy tables are based upon studies which estimate the probable average length of life of all persons of a specified group, of a given age. It applies to one who has average health and exposure to danger of people of that age. It is simply an estimate based upon past experience. It is not binding upon you.

We know that some individuals within the specified age group will live longer and others will die before the statistical life expectancy. Thus, you are called upon to decide plaintiff's life expectancy, taking into account the state of his health, his work habits and other relevant factors.

As to his work expectancy, normally this would be to age 65, or a work expectancy as of now of 31 years. But, again, some people work longer than the usual work expectancy period; others retire earlier.

In this instance, too, you will estimate his probable work expectancy, taking into account the relevant factors.

First, as to future medical expenses: You have had the testimony as to the likely amount of medical and other required expenses.

Now, perhaps an example will be helpful to you here. Assume,and please understand that the figures I am

using are purely hypothetical, and are suggested only as an example for your guidance in properly assessing damages.

Assume that you decide plaintiff's life expectancy is 32 years, and that his annual and necessary medical and related expenses required, as a result of the damage, would be $1,000 per year. The damages to be awarded are not 32 multiplied by $1,000, or a total of $32,000; it is a lesser sum. Adequate allowance must be made for the earning power of the money. A capital sum in hand may be invested at once and earn interest. Thus, if someone owed you $32,000 payable in installments of $1,000 a year for 32 years, you know that if you had a fixed sum in hand right now, a sum less than a total of $32,000, it would be the equivalent of the total installments to be received year by year at the end of the 32-year period.

You must compute the present worth of the damages for future medical expenses so that by the expenditure of both principal and interest in each year, the total sum will be exhausted at the end of the period you decide Lane will require future medical treatment.

The earning power of money, that is, the rate at which a capital sum can be invested to yield income, sometimes referred to as the discount rate, is to be

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determined by you.

The rate of return should be that which a person, without financial skill, could safety secure on his investment. I suggest at this time that it would be 5-1/2 or 6 per cent. Thus, the larger the rate of return, the smaller the capital sum that is required.

Next, we consider the question of future loss of wages. The plaintiff obviously is presently incapacitated from engaging in any gainful occupation. However, as he testified, he is attempting to regain his earning potential by attending school in the hope that sometime in the future he will be able to earn some income. He is, however, entitled to be compensated for future loss of income or the dimunition of his earning power.

In this instance, it is not the plaintiff's life expectancy which governs, but his estimated work expectancy if he had not been injured. In other words, taking into account his age, the state of his health, his physical ability, his earning power, and regularity of employment prior to the accident, you decide how long a period it is likely that he would have continued to work except for the injuries sustained as a result of the accident and, in consequence, deprived of such future income.

Here, too, once you have decided the yearly amount, and the period of wages, and the period of future lost income or dimunition of income, including probable increases in wage payments and advancement in position, you must reduce that total to the present value on the same basis as I referred to in the instance of future medical expenses.

Finally, there is the element of damages for pain and suffering experienced by Lane to the present and such future pain and suffering he is likely to endure in the future. Here there is no yardstick or mathematical formula to guide you. You use your good judgment and common sense, taking into account the nature and extent of the injuries and those you find to be permanent.

If plaintiff David Lane -- I think I have said this already -- sustains any of his claims, Mary Ann Lane also is entitled to the recovery of damages.

You will award her damages for pecuniary loss which you find she sustained by the loss of her husband's services and society. In determining the amount of such damages, you may take into consideration the nature and extent of the husband's services and society prior to the accident, including his disposition, temperament, character and attainments; the interest he manifested in his home,

the social life of his family, and the comfort, happiness, education and general welfare of the members of his family, the services he rendered in superintending the household, training the children, assisting his wife in the management of her affairs, his acts of affection, love and sexual relationship, and the extent to which the injuries he sustained in the accident incapacitated him from performing such services and providing such society for her after the accident.

You will award Mrs. Lane such an amount, based upon the evidence of value you heard, and upon your own observations, experience and knowledge, conscientiously applied to the facts and circumstances as in your judgment will compensate here for the pecuniary losses that you find she has sustained, and is reasonably certain to sustain in the future by reason of her husband's inability to perform such services and provide such society as a result of his injuries.

When you have computed the various items, you have the total amount of damages, but this is not necessarily the amount of your award. Here you have to consider the defendants' contention with respect to the failure of plaintiff to wear the seat or the lap belt, as it is referred to, at the time of the accident, and that he failed

to exercise a reasonable degree of care for his own safety.

Here the defendants contend that had plaintiff worn a seat belt, his injuries would have been less severe than they actually were. The burden of proof on this issue is upon the defendants.

In computing damages, you may take into consideration plaintiff's failure to wear a seat belt only if you find the defendants have established by a fair preponderance of the evidence:

(1) That plaintiff was negligent in not using a seat belt, that is, that he failed to exercise that degree of care that the average and reasonably prudent person would have exercised under all the attendant circumstances as of the time and place of the accident;

(2) That such conduct was a proximate cause of his sustaining injuries which otherwise he would not have sustained. Again, this subject is a matter of controversy.

General Motors, to support its position, offered the testimony of an expert who, based upon reasons detailed to you, was of the opinion that had plaintiff worn a seat belt, he would not have sustained the spinal cord injury which resulted in paraplegia, that his injury would have been of a minor nature.

The plaintiff, to rebut this claim, recalled Dr.

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Samuel Stevens who disagreed with defendant's expert on this subject.

If,upon all the evidence, you find the defendants have sustained this defense, then you must take it into consideration and award an amount that will compensate the plaintiffs only for those injuries and damages they would have sustained had the seat belt been worn, and return your verdict accordingly.

You may not add any sum to the amount of your verdict for federal or state income taxes, as the sum recovered by plaintiff is not taxable to him.

In discussing the testimony, I have, of course, sought to adhere to the record. I think I referred to this previously. If, per chance, any reference I have made to the testimony in this case does not coincide with your own recollection of the facts, you are to have no hesitancy -- and I emphasize this as strongly as word can convey meaning -- to disregard my statement and relying entirely upon your own recollection.

No statement made by me is intended in any respect to influence your judgment, and I am sure that you all understand that.

During the course of the trial, occasionally I asked questions of the witnesses. You are to draw no

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inference from the Court's questioning of a witness. The Court's duty, in addition to presiding at the trial, is to see that such issues as there are in the case are clarified, and such questions that I asked were merely for the purpose of seeing that the facts in relation to a particular issue or issues were properly presented before you and made clear. You are not to assume that I have any view as to how the case is to be decided. That is solely your function and responsibility, and no one, including the Court, may invade your province.

Under your oath, you were sworn to try this case in accordance with the law and the evidence and render a true verdict accordingly. Each of you is entitled to his or her own opinion, but you are required to exchange views with one another. I think I told you at the very start of the trial that this is the very function of the jury, to review the evidence, discuss and consider and evaluate the testimony of the witnesses. You are supposed to listen carefully to one another's arguments.

Now, if you should have a point of view that differs from that of fellow jurors, and if, after discussion and listening to reasons and arguments of your fellow jurors, you are persuaded that an originally held point of view should yield upon the basis of the law and

evidence, there is no reason why you should not change a view previously held. But remember always that your final vote must reflect your own conscientious judgment as to how the case should be decided upon the facts and in accordance with the laws.

To report any verdict it must be unanimous.

Now, I have prepared what we call a Special Verdict in view of the issues in the case because I thought it would be helpful. This, in effect, is submitting a series of questions to you which when answered will result in the verdict in the case.

1. With respect to plaintiff's claim based upon the alleged instability of the vehicle, do you find plaintiff has sustained his burden of proof against:

(a) General Motors Corporation?

And to decide that, there is a line below that, (answer yes or no).

(b) Pitman Manufacturing Company?

(answer yes or no.)

2. With respect to plaintiff's claim based upon the alleged defect of the latch mechanism, do you find plaintiff has sustained his burden of proof as to the defendant General Motors?

(answer yes or no)

And there is a space to answer that.

3. If you find that plaintiff is entitled to an award of damages against either or both of the defendants upon any of the above claims, what amount of damages do you award to David Lane for the following:

(a) medical, hospital and related necessary expenses to date

And a space for the amount.

(b) wages lost to date.

(c) pain and suffering to date; and

(d) future medical and related expenses discounted to present worth.

(e) future loss of wages, discounted to present worth.

And then the total for David Lane.

In the case of Mary Ann Lane:

5. What award do you make for damages suffered

(a) to date -- and a space for the amount.

(b) future damages discounted to present worth -- and a space for the amount.

And total award of damages to Mary Ann Lane.

And I have two other questions:

7. Did the defendants sustain the burden of proof that plaintiff David Lane was negligent because he

did not wear the lap belt and thereby increased the severity of his injuries?

(answer yes or no.)

Then answer Question 8 only if you have answered "yes" to the foregoing question.

8. Does your verdict reflect you have considered this in your award of damages?

Now, members of the jury, you might remain where you are because I will see the lawyers now in the robing room.

You may come in, gentlemen.

(In the robing room.)

THE COURT: The plaintiff may state his exceptions, please.

MR. WALKUP: No exceptions.

THE COURT: Mr. Reardon?

MR. REARDON: Your Honor, I have already given you certain comments with regard to our legal position at the time we made our various motions, one with respect to the charge on Evans as against Larsen, and I would except to that portion of your Honor's charge with respect to foreseeability.

Secondly, I except with respect to the reasonably fit aspect of the charge, as distinguished from the

unreasonably dangerous aspect.

THE COURT: That's really the Larsen exception, isn't it?

MR. REARDON: All right, your Honor.

I believe they are the only exceptions that I have, your Honor.

THE COURT: Mr. Schwab?

MR. SCHWAB: No exceptions.

MR. REARDON: I thought your Honor was going to take exceptions first and then requests?

THE COURT: I don't take any requests now, anyway. That is the one reason we submit requests in advance.

MR. REARDON: Maybe I didn't understand your Honor's procedure.

THE COURT: Then you may take exception to my failure to grant requests. You may do that.

MR. REARDON: All right. Let me make myself clear, your Honor. There are just two points that troubled me.

First, your Honor did state, during the course of the charge relating to stability, that the jury should not infer from the mere fact that the vehicle turned over that the vehicle was unstable, or words to that effect.

Your Honor did not give a similar charge with respect to the latch. I would ask your Honor to charge, in effect, that the mere fact that the door opened during the course of the roll over does not mean in and of itself -- and they shouldn't infer -- that the latching system was defective.

Your Honor did take care to do that on the one phase and not on the other. I would like the jury to understand that the same principle is applicable on both.

MR. WALKUP: I don't know that I have any standing to object, but I think that charge could have been offered earlier. By now giving that charge --

THE COURT: I don't recall that you had anything like that.

MR. WALKUP: -- it would unduly emphasize it, and now, after we have had the charge, to come into chambers and go back out and have his Honor tell them that specific item I think would be highly prejudicial to the plaintiffs and should have been presented and incorporated as a general thing.

MR. REARDON: My thought is that it was, Mr. Walkup, and of course, only going through the various requests, by doing that could we establish that. But the fact of the matter remains that his Honor did charge it in

one respect, and not to charge it in the other I think is prejudicial on the door latch claim.

MR. WALKUP: I think his charge fairly stated, in a couple of places, that the mere happening of an accident --

THE COURT: I think I have, too.

MR. REARDON: I think I ought to except to that portion of your Honor's charge at the very beginning where your Honor talked about a claim by the plaintiffs with regard to General Motors that the chassis was not adequate to support what went on top of it. It was at that point where your Honor was talking in general terms and not specific terms about the contention of the plaintiff.

THE COURT: Yes. As a matter of fact, there was testimony on that by a witness. That was part of the claim.

MR. REARDON: I am not familiar with that.

My own recollection is that --

THE COURT: Well, go ahead.

MR. REARDON: I don't know what your Honor has in mind. My own feeling is that there is no claim here that the chassis was incapable of supporting what went on top of it.

THE COURT: That was with respect to -- it tied in obviously with respect to the axle or the inward position of the tires.

MR. REARDON: Well, I understand that part of the claim, your Honor, but the way your Honor addressed the matter, it seemed to be that General Motors was involved in some special claim about the chassis being incapable of withstanding what was being put on it. I have no problem with the tires being inboard. I think the jury understands that completely.

MR. WALKUP: Considered in its totality, if I may respond to that, it would seem to me that his Honor told the jury that he was merely making a broad outline to help put the matter in context and the jury would disregard his thoughts, and it would be up to them, and counsel debated on it elaborately in argument.

I hate to see emphasis put on something favoring one party or the other. I don't think we should go out and say something favoring the plaintiff or Pitman or General Motors. It was a very balanced charge and I don't think it is going to mislead the jury at all, and that little miniscule point that you have in mind might.

MR. REARDON: If it were part of the plaintiff's case I wouldn't make this argument, but I don't think it is.

MR. WALKUP: I believe it is well within the issues, your Honor.

MR. SCHWAB: When the Court is finished writing, I would have a request, also, your Honor, in view of Mr. Reardon's request.

THE COURT: What is that?

MR. SCHWAB: If the Court is going to make some reference to door latch opening not indicating defect, I would like to point out to the Court that the Court did mention a toppling over not indicating defect, but counsel for the plaintiff has apparently a second theory, from what I gather, which is, your Honor, skidding as a result of defect, and perhaps that should all be lumped in together then really, because the fact of a vehicle skidding is surely no more proof of a defect than toppling over.

THE COURT: You see what is happening now, and that is one of the reasons the rules require that the requests be in advance. I went over the requests with you.

I don't recall, Mr. Reardon, there was any specific request just as you have submitted it to me now. I am going to let the charge stand as it is. Your exception with respect to my applying the theory of the Larsen case

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is noted. It has been in the record previously.

And insofar as I decline to enlarge on the charge now with respect to a special instruction to the jury, that the failure to latch, by itself, does not establish plaintiffs' claim, you have an exception to that too, and I think I will let it stand the way it is.

MR. REARDON: Thank you, your Honor.

(In open court; jury present.)

(Discussion off the record.)

(The two alternate jurors were excused.)

THE COURT: All right. Swear the marshal.

(A marshal was sworn.)

THE COURT: All right, jurors, you may retire.

(At 3:20 p.m., the jury left the courtroom to commence their deliberations.)

(At 4:45 p.m.)

THE COURT: I think you gentlemen know there was another note where the jurors asked for a decanter, and that was number one, and that was sent in to them.

I have another note from them, and this reads, "May we have the lock, the pictures of the lock enlarged, and the pictures of the door showing lock."

Can you all agree on what they are asking for? There is no question about the lock.

Now, where are the pictures of the lock enlarged?

MR. REARDON: Would you read that again?

THE COURT: "The pictures of the lock enlarged."

MR. SCHWAB: Just the lock and the pictures of the lock enlarged?

THE COURT: The lock, the pictures of the lock enlarged, and the pictures of the door showing the lock.

THE COURT: Are you agreed then, gentlemen?

MR. WALKUP: I am agreed so far.

MR. REARDON: We don't have to identify these, do we?

THE COURT: Have we agreed on the exhibits?

MR. REARDON: Yes, your Honor.

MR. WALKUP: Yes, your Honor.

MR. SCHWAB: Yes, your Honor.

(Note marked Court Exhibit No. 1.)

(6:17 p.m. in the robing room.)

THE COURT: I have a note from the jury reading: "Did anyone testify why safety non-burst locks were not used on trucks in June(June 2, 1967)."

And my recollection is that there is no such testimony. Does any counsel have any different recollection?

MR. REARDON: I can recall no specific testimony of that kind, your Honor.

MR. WALKUP: Neither can I, your HOnor.

THE COURT: Mr. Schwab?

MR. SCHWAB: I cannot recall of any specific testimony. The only thought that mulls in my mind is whether the statement is a correct statement in view of all the evidence. I don't know whether that is a correct statement or not. There was--

THE COURT: The question is did anyone testify. If you point it out to me, you have got the record here, if you're raising an issue about it, give me the record and I will call it to their attention.

MR. SCHWAB: I am unaware of any specific proofs to specifically answer that question.

THE COURT: Suppose I call them in.

MR. REARDON: That kind of a question wasn't asked of any witness. That doesn't mean that within the framework

of a mass of testimony there isn't some--

THE COURT: Mr. Reardon, I am not going to enlarge upon their question. I am going to answer the question that was put to me. If there are further questions they have on it, on the subject, I assume they will ask.

MR. REARDON: All right. How will your Honor propose to answer it?

THE COURT: I would say that to answer their question, after discussing it with the lawyers, nobody has any recollection that there was any specific question put to a witness on this subject.

MR. REARDON: Fine.

(In open court, jury present.)

THE COURT: Members of the jury, I have your note, which read as follows:

"Did anyone testify why safety non-burst locks were not used on trucks in 1967 (June 2nd.)"

I have discussed the matter with the lawyers. My own recollection is that there is no such testimony, and the lawyers also agree that no one has any recollection that this specific question was asked of any witness. And that is the state of the record.

Now, you have another question here:

"How late may we stay?"

This part you don't need on the record.

(Discussion off the record.)

THE FORELADY: Your Honor, I wonder if we could speak with you privately about something we are trying to interpret, something you had said. And it may bring the whole thing to a conclusion.

THE COURT: You can't speak with me privately. The parties are entitled to know whatever question you put to me. If you have a question, you write it out and I will answer it, if it is a question that I can properly answer.

I think you should go inside and consult on the formulation of the question with your fellow jurors.

THE FORELADY: We would like to discuss it.

THE COURT: All right. Why don't you go inside and discuss it.

(At 6:26 p.m. the jury again retired to continue their deliberations.)

(Court's Exhibit 2, marked.)

(At 6:50 p.m., the jury returned to the courtroom.)

THE CLERK: Jurors will please answer as their names are called.

(Jury roll called-all present.)

THE CLERK: Madam Forelady, have you agreed upon

a verdict?

THE FORELADY: Yes.

THE CLERK: How say you? Question one. With respect to plaintiffs' claim based upon the alleged instability of the vehicle, do you find plaintiff has sustained his burden of proof against (A) General Motors?

THE FORELADY: No.

THE CLERK: (B) Pitman Manufacturing Company?

THE FORELADY: No.

THE CLERK: With respect to plaintiffs' claim based upon the alleged defect of the latch mechanism, do you find plaintiff has sustained his burden of proof as to the defendant General Motors?

THE FORELADY: No.

THE COURT: Then you don't answer the other questions.

Do you desire to have the jury polled, anybody?

MR. WALKUP: Yes, your Honor.

THE CLERK: Ladies and gentlemen of the jury, listen to your verdict as it stands recorded.

Question one, with respect to plaintiffs' claim based upon the alleged instability of the vehicle, do you find plaintiff has sustained his burden of proof against (A) General Motors Corporation? Your answer is no.

Question (B) Pitman Manufacturing Company. Your answer is no.

Question two. With respect to plaintiffs' claim based upon the alleged defect of the latch mechanism, do you find plaintiff has sustained his burden of proof as to the defendant General Motors? Your answer is no.

(Each juror, upon being asked, is that your verdict? Responded in the affirmative.)

THE CLERK: Jury polled, your Honor. Verdict unanimous.

(Jury discharged.)

THE COURT: If there is nothing else, the court is adjourned, unless anybody has motions.

MR. WALKUP: There are no motions at this time. I assume that any motions we may have will be reserved.

THE COURT: Well, there is a rule. I think you have to make them within a fixed time.

I will say good night to all of you.

I (We) hereby certify that the foregoing is a true and accurate transcript, to the best of my (our) skill and ability, from my (our) stenographic notes of this proceeding.

Official Court Reporter
U. S. District Court

JUDGMENT.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

- -X

DAVID LANE AND MARY ANN LANE,

Plaintiffs,

-against-

GENERAL MOTORS CORPORATION, A. B. CHANCE CO., AND PITMAN MANUFACTURING CO., A DIVISION THEREOF,

Defendants.

- -X

The issues in the above entitled action having been brought on regularly for trial before the Honorable Edward Weinfeld, United States District Judge, and a jury on February 25, 26, 27, 28, March 1, 4, 5, 6, 8, 11, 12, 13, 14, 15 and 18, 1974, and the Court having submitted the attached special verdict to the jury, and the jury having answered the special verdict as indicated thereon, and the jury having returned the special verdict in favor of the defendants, it is,

ORDERED, ADJUDGED AND DECREED, that defendants, GENERAL

JUDGMENT

MOTORS CORPORATION, A. B. CHANCE CO., AND PITMAN MANUFACTURING CO., A DIVISION THEREOF, have judgment against the plaintiffs, DAVID LANE AND MARY ANN LANE, dismissing the complaint.

DATED: New York, N. Y.
March 19, 1974

Raymond F. Burghardt
Clerk

APPROVED:

Edward Weinfeld
United States District Judge.

jwe TRANSCRIPT OF ORAL ARGUMENT ON PLAINTIFFS' MOTION FOR A NEW TRIAL.

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK

----------x

DAVID LANE and MARY ANN LANE, :

Plaintiffs, :

-against- : 71 Civil 986

GENERAL MOTORS CORPORATION, :
A. B. CHANCE COMPANY and PITMAN
MANUFACTURING COMPANY, :

Defendants. :

----------x

May 7, 1974
5:15 p.m.

BEFORE:

HON. EDWARD WEINFELD,
District Judge

APPEARANCES

MORRIS HIRSCHHORN, ESQ.
Attorney for Plaintiffs

SIMPSON, THACHER & BARTLETT, ESQS.
Attorneys for Defendant General
Motors Corporation
BY: ROY L. REARDON, ESQ., of Counsel

COPPOLA & D'ONOFRIO, ESQS.
Attorneys for defendants A.B. Chance Company
and Pitman Manufacturing Company
BY: BERMAN & FROST, ESQS.
HAROLD SCHWAB, ESQ., of Counsel.

TRANSCRIPT OF ORAL ARGUMENT ON PLAINTIFFS' MOTION FOR A NEW TRIAL

MR. HIRSCHHORN: For the record, my name is Morris Hirschhorn and I am the attorney for the plaintiff and moving party on this motion.

This rule 59 motion to set aside the jury verdict is based upon the fact that it was against the credible weight of the evidence and concomitant to what would be the important issue as to whether or not the jurors in this case followed the Court's instructions and applied the law given to them in the charge, or whether they took the law unto their own hands and applied the law as they saw it.

The reason this contention is made is based upon the question the jurors propounded to the Court just before they returned the verdict which stated "I wonder if we can speak with you privately about something we are trying to interpret, something you said, and it may bring the whole thing to a conclusion."

Your Honor recalls you instructed and directed the jurors to return --

THE COURT: What did I say precisely to the jurors?

MR. HIRSCHHORN: I don't have the record with me, your Honor. I have no portion of the record and I --

THE COURT: Maybe your adversary will help you out here.

MR. REARDON: Yes, sir.

THE COURT: And loan you a copy of the minutes.

MR. HIRSCHHORN: Your Honor said, "You can't speak with me privately. The parties are entitled to know whatever question you put to me. If you have a question you write it out and I will answer it if it is a question that I can properly answer.

"I think you should go inside and consult on the formulation of the question with your fellow jurors."

Now, your Honor recalls that instead of the jury doing that they returned with the verdict. And our contention is we would like to evaluate the significance of that procedure in terms of whether or not the jury was applying the law given to them in the charge, or whether of necessity they were applying their own interpretation of the law.

Now, it seems to me that the jury must have been mistaken or misconceived their function and duties or their powers when they decided that they would apply the law as they saw it without getting some sort of explanation or --

THE COURT: Why do you say they applied the law without some sort of explanation? That is what I don't quite follow.

Are you suggesting that they had something in mind different from what was contained in the Court's instructions?

MR. HIRSCHHORN: Yes, your Honor.

THE COURT: What do you think they had in mind? Aren't you attempting to psychoanalyze the jury now?

MR. HIRSCHHORN: No. I am not taking the position that a jury is not entitled to speculate or conjecture.

THE COURT: They are not entitled to speculate or conjecture.

MR. HIRSCHHORN: Here we had a lot of witnesses, facts and law in the charge, but it seems to me that they could have asked about -- let's take the two causes of action against General Motors.

One cause of action was based on a design defect under the Products Liability Law and the other cause of action was based on the doctrine of crash worthiness, or enhanced injuries as it is sometimes called.

While there were two causes of action against General Motors, in law there were various branches of the so-called doctrine of crash worthiness or enhanced injury. We don't know what the jury had in mind insofar as asking for some sort of help from the Court. There were many issues on the design defect as against one or the other or both the defendants.

It could be that if your Honor had the opportunity to give an explanation if they had come back and asked for it and if they followed the Court's instructions and directive

the verdict might not have gone the way it did. At least, it might --

THE COURT: I gave no instruction. I simply suggested if they had a question to formulate it. I would not take a question from a single juror.

MR. HIRSCHHORN: We certainly agree to that because I think that should be asked in front of Court and counsel so that we could have an opportunity. That is the whole point. We had no opportunity to understand what was troubling them and when they asked for something to interpret, it seems to me since you instructed them that they were the interpreters of the facts and you as the Court were the interpreter of the law, they were asking you a legal question. By their not getting the information they requested, the only reasonable conclusion left is they took the law unto their own hands and made up their own legal conclusion because you certainly didn't give it to them because they didn't let you.

Let's take the prior question, where they asked the one written prior question, in which they said, "Did anyone testify why anti-burst locks were not used on trucks in 1967."

First of all, there was testimony in the record that on imported Chrysler trucks antiburst locks had been used. The testimony was unrebutted --

THE COURT: Mr. Hirschhorn, didn't I consult with counsel before I prepared my answer with respect to that?

MR. HIRSCHHORN: Oh, yes.

THE COURT: And did I not ask each lawyer whether or not he had any recollection of any testimony in the case on that subject?

MR. HIRSCHHORN: That's correct, exactly as you say.

THE COURT: And wasn't the answer that I prepared based in effect on a consentual basis, with all lawyers agreeing that to the best of their recollection there was nothing in the record?

MR. HIRSCHHORN: Absolutely, your Honor.

THE COURT: What is the complaint then?

MR. HIRSCHHORN: The point is standing by itself the prior question had no particular significance because we didn't know what the jury really then was inquiring into. There wasn't enough by one single question for any counsel to determine what it meant. But if you were to couple it, compare it or contrast it with the fact that they walked into the jury room, they asked for legal help, in effect, they walked out, they are directed to write down their questions and they come back and come back with a verdict, it seems to me that the first question, their failure to follow the Court's suggestion, or however you want to characterize it, directives

or instructions, or write down the question, it was a question of law. How do we know if your Honor had an opportunity to answer it what the result would have been?

The fact that we don't know doesn't preclude the fact that -- doesn't make the verdict a valid verdict per se.

How did it influence their weighing the evidence?

THE COURT: Of course, it could very well be that by the time they got back into the jury room the matter, whatever was troubling them, was discussed among themselves and they came to a judgment where they required no clarification.

I have sat in cases, for example, a criminal case, where the jury had come in after deliberating for hours and then asked for a re-reading of the entire charge. And I say, "If there is any particular area you would like, well, please advise me and we will have it read to you."

And the jury has gone out and in a matter of two minutes come back with a verdict, despite the fact that they asked for a reading of the entire charge with the Court suggesting that a portion or any part or portion of the whole charge that might be under consideration would be read to them.

MR. HIRSCHHORN: I understand that.

THE COURT: You know, when you get into this area,

just as I suggested a moment ago, you are trying to psychoanalyze the jury.

MR. HIRSCHHORN: No, I am not trying to psychoanalyze them. The rule allows us to ask the Court to evaluate whether the verdict was against the weight of the credible evidence. Now, the fact witnesses, the exhibits, the brunt of the credible testimony, was certainly not against the plaintiff, but much more important than that, and much more than the confusion the jury might have had or didn't have, or resolved their differences in the courtroom, but to me it would seem only as on the facts how could they resolve the differences on the law if they admitted in open court they didn't know a certain portion of the law.

THE COURT: They didn't say that at all. That is what you are saying now. You are interpreting the verdict.

MR. HIRSCHHORN: I interpret only one thing. They asked the Court for an interpretation. It would be far-fetched to assume they were asking the Court for an interpretation of the facts, because you specifically told them they were the interpreters of the facts so that only left an interpretation of the law.

THE COURT: Wasn't there a sharp issue of fact raised by the testimony of the experts on both sides with respect to the two specific claims that were presented to the jury?

MR. HIRSCHHORN: Assuming what your Honor poses --

THE COURT: I am not assuming. Mr. Hirschhorn, I put a very direct question to you and I think you know I like a direct answer to a direct question.

Wasn't there a sharp conflict in the testimony of experts on the two very specific claims upon which you predicated a claim for the plaintiff?

MR. HIRSCHHORN: There wasa sharp question of fact insofar as the cause of the accident. There was no issue of fact, it was totally undisputed as to how the accident occurred. There wasno dispute that it had occurred on a certain day in a certain way. The only dispute on the second cause of action against General Motors on the so-called second accident or doctrine of crash worthiness, was the subject of where did the man sustain his injuries. Did he sustain it when this 30,000 pound truck fell over on the side after the door opened up and he was ejected, or did he sustain it inside the cab, the cab chasis?

THE COURT: Wasn't there also an issue as to whether or not a kinetic force was brought into play as against a different type of force?

MR. HIRSCHHORN: That is one of the many things the Court can evaluate on this rule 59 motion. The truck mounted the curb with the front wheels flush. There was no

question of some kinetic energy at that point. When you couple that with the fact that the trial record shows the door jumped open before the right wheel hit the curb, it shows that the weight of the evidence on the subject of kinetic energy is very much in doubt.

Here is what I mean to say: Witness Layton clearly testified that as the front wheels -- that certainly created kinetic energy--mounted the island curb the door suddenly popped up; that it was the fault of the right wheel tire that it struck; and how are we to know all this chassis damage, the twisting, the requirement to build another $7,000 chassis, that the damage to that chassis was created when it actually hit the ground.

All of the defense is conjecture, but the facts as to how the accident occurred and where it occurred are undisputed. The only disputes are created by two of the experts who were not there.

Now, if we discontinue all experts -- let's assume there were no experts in the case, though there were four with many complicated issues, there were four experts -- and discontinue all the experts for the plaintiff and defendant.

We have a truck going out of control on snow and ice, hitting the island curb, rolling over and falling down

and smashing its side on the ground; the front tires hitting first, the doors popping open before the right rear wheel strikes the curb. And when you couple those undisputed facts with the law, the New Jersey Products Liability Law of Strict Liability, this type of liability which is without fault, dropping the subject of negligence or notice, and so on, it seems to me it may have some part to play here.

The Court may recall the case where it jumped open. General Motors cited three or five citations, all maritime cases, on their part, and they cited the Oliveras case.

In that case the door jumped away from its hook. There was no explanation why it did. The plaintiff was injured. The Second Circuit Court held that the plaintiff doesn't have the burden of explaining why the door jumped up. The mere fact that it failed to service was enough.

I am not saying unseaworthiness and crash worthiness are the same thing. But they do have one thing in common, a concept of liability without fault, a very difficult subject to understand per se.

THE COURT: I think it is very simple to understand.

MR. HIRSCHHORN: Well, it is difficult for me after 20 years to still understand it, and I think I understand as

much as anyone else about it.

The point is this: It would seem to me that rather than the Compton case applying or the Creed case applying, as General Motors raises in their briefs in opposition to the motion, it seems to me that cases like the Reisenstock and the Oliveras case govern.

Just this year the Court of Appeals came out with a decision on a product liability case which is very appropriate to this case.

THE COURT: I think you got a very favorable charge on product liability. The defendant excepted to the charge. I gave a broader charge than the defendant thought I should have. They wanted a charge that there had to be proo: that it was unreasonably dangerous. That was the basis of their exception to the charge. I said that the proof simply had to show thatit was not reasonably fit for its intended purpose.

MR. HIRSCHHORN: We were perfectly satisfied with the charge.

THE COURT: Of course you were.

MR. HIRSCHHORN: You will notice there wasn't a word said -- and this is what the defendant General Motors said -- that I am challenging the Court's charge. Other than the weight of the evidence the issue is the significance of wh.

the jury did or didn't do. There are several recent cases in '72, '3, and '4 on the subject of this -- I am not saying per se on all fours. I am saying when the Court feels that the jury was confused or perhaps mistaken in their concept of the law or in their actions that he has a right to review their acts or failures to act.

But the reason I have mentioned the Reisenstock case and I just speak about this case as the last point is this:

In a products liability case where doctrines of strict liability and crash worthiness are concerned, the case goes so far as to say that the plaintiff need not even proof what was the cause of the accident, just so long as he proves there was a defect. By the jury asking the first question about the safety of the anti-burst lock, they are at least accepting that portion of the plaintiff's contention that the safety of the anti-burst lock could have played a part in not being injured. It could have played some part.

The Fourth Circuit says if there is a defect. Let's assume for argument's sake the jury accepted that as a defect, though not the cause of the accident, the only thing the plaintiff would have to show is he sustained enhanced injury from the so-called second jury. Did the juryunder-

stand that? It seems to me somewhere along the line -- we didn't realize it by the first question, but certainly when you couple the two questions and their acts or failure to act, it seems to me they definitely went off on a tangent.

I agree I certainly can't postulate what it was, but there were many, many complicated problems with the four engineers taking the stand to have caused them to come back and ask for help. I know they could have resolved their differences, but I cannot see in the jury room at that moment, and I cannot see them resolving it on the law. They conceded they needed help in the instructions by the very nature of the question.

Now, you say that I am reading something into it. There is no other way one can read it with reasonable --

THE COURT: You just made a reference to some complicated evidence. My recollection is that the jurors asked during the conduct of the trial some very pertinent questions of these experts.

MR. HIRSCHHORN: I certainly agree the questions were very interesting and pertinent.

THE COURT: They were more than interesting. They were very pertinent questions asked by these jurors.

MR. HIRSCHHORN: There was no question they were very interested in the case and asked many pertinent ques-

tions. The very first question -- I mean the fact that there was testimony in the record that these safety locks were used and the question why they were not used is fallacious on its face. We didn't object, and per se I am not using that as the ground of this motion. But the thing that really disturbs us on the plaintiff's side is the second question as compared to the nature of the law.

We felt when we dropped the negligence count it would be that much easier and the Court's charge was pre-eminently fair. There is no question about the law and the way the charge went and we didn't except to the charge, and there was no point to except to it. It was a pre-eminently fair charge. But there was something about the way the jury handled it that we thought was extremely basic. And when you consider the type of law under which this case was invoked, the fact that in the Reisenstock case there was a Volkswagon mini case and on appeal the case was dismissed because when that microbus crashed the Court said, "What do you expect of a cheap vehicle," but in our case we have a $35,000 vehicle, 30,000 pounds, customized, with a thin lash where the door pops up. It seems to me if the tests were to be applied to the law in the Reisenstock case there was more than a meritorious cause of action on the part of the plaintiff, at least insofar as that portion that dealt with

the door locking system. The jury was concerned about it. It wasn't clear what they were concerned about, but they seemed to recognize and accept it and we feel that coupled in comparison or in contrast with the second unanswered question that the problem was one of law; that the answer changed the result; that these types of actions and/or failures to act on the part of the jury have been the basis of a new case.

The case is cited in the papers and we ask the Court to consider granting some form of relief.

MR. REARDON: Simpson, Thacher, Bartlett, by Roy L. Reardon, for General Motors.

If your Honor please, I think Mr. Hirschhorn put his finger on it when he said that the plaintiffs' counsel was concerned about the results in the case because it resulted in a verdict for the defendant.

I think this case is a part 4 case. There were very sharp issues of fact and very sharp issues of credibility. He relies upon the so-called undisputed testimony that these anti-burst locks were in fact used. And the argument on that testimony in the record is they were separated.

It is entirely possible, and it would be consistent with your Honor's instructions that the jurywould not accept the testimony in any respect. That was entirely within their

province if they chose to do so. That therefore would eliminate the basis of his argument that the jury had before it, the anti-burst lock being in existence.

One thing about this jury that I think all counsel accepted and indeed commented on with the Court both on and off the record, was this was an astute jury that not only paid attention and asked sensible questions, but followed the testimony of the witnesses very, very carefully.

I think all counsel commended the jury to your Hono: and in some cases directly to the jury themselves.

The confusion in the charge, your Honor, I am somewhat mystified by basically because the phrases of the charge came entirely from Mr. Walkup during the course of the argument.

THE COURT: What do you mean "the confusion in the charge"? I don't understand that.

MR. REARDON: Counsel for the plaintiff suggests -- at least as I interpret his mass of papers. I got from Mr. Hirschhorn -- suggests that the jury in one form or another was confused and that the confusion is reflected in the unanswered question. I can only say no exception was taken by plaintiff's counsel to the charge. Mr. Walkup praised it at one point in the record and I don't think there is any confusion on the law that can properly be made.

The Olvieras case which counsel talked about is one we did indeed cite for the proposition that the legal issue on this motion is whether or not your Honor deems the jury verdict to represent a miscarriage of justice. On the basis of all the facts, the testimony of the witnesses, I don't think your Honor can justify that.

I think it was a fair verdict. I think this case was tried fair and square. The charge was fair, although I excepted to it on legal matters. The jury verdict was fair and should not be disturbed.

On the two questions -- I remember both very clearly -- on the anti-burst locks, your Honor read it to counsel. The only one who really commented on it was myself and I said I don't remember the testimony of any witness responsive to that question.

I asked your Honor how you intended to handle it. Your Honor said, "I am simply going to tell them that." That is exactly what you did. Nobody excepted to it and it was a perfectly acceptable instruction as far as all counsel were concerned.

The forelady of the jury then stood and raised the second question. I think your Honor's interpretation suggested to Mr. Hirschhorn is entirely valid. What happened after that, after they indicated they had a question, your Honor said what

your Honor repeated and what the record reflects. It was then suggested that they prepare a written question and Mr. Castellano handed them the pad and there was some little discussion between them and then it was decided, pursuant to your Honor's instruction, that if they had something they wanted to write out to go inside and confer and write it out.

It was entirely reasonable that they decided they had nothing to write, no questions to ask, and I think that is a legitimate interpretation.

If they had something on their minds we would have heard about it.

The verdict is fair and square and I think it ought to stand.

Thank you.

MR. SCHWAB: Harold L. Schwab of the firm of Emil Z. Berman and Harold A. Frost on behalf of the Pittman Manufacturing Company.

I came here, your Honor, prepared to argue at length for five minutes. I have listened intently to what Mr. Hirschhorn has said. I have not heard any statements by Mr. Hirschhorn here in court today which remotely relates to my client Pitman Manufacturing Company.

Accordingly, unless the Court desires that I comment at some length for the remaining three minutes with

the expert for Pitman with the forces generated in this accident skidding on ice and snow and striking a nine and a half inch curb broadside, would turn over.

A three-wheel vehicle such as a golf cart with the forces involved in this accident, skidding on snow and ice hitting a curb nine and a half inches broadside, would turn over.

A four-wheel automobile, be it a Chevrolet or Cadillac, will simply turn over.

A four wheel truck will turn over and a six wheel truck will turn over.

And the jury accepted the credible testimony of probably the most imminent expert in this field, Mr. J. Stannard Baker, and that was obvious from the jurors' questioning of Mr. Baker.

And I submit, your Honor, when all is said and done this case was crystalized in the testimony of one of the first witnesses in the case, David Burlew, the driver, when he admitted on cross examination after the accident in his words to the co-worker Greene, which were "Oh, my God, Bill, I am going to lose my job."

THE COURT: All right, gentlemen. I am prepared to dispose of the matter.

The Court has heretofore carefully studied the

moving papers and opposing affidavits and briefs and has now heard argument of counsel. The statement which the jury made furnishes no basis for setting aside the verdict. The case presented, the specific claims, the experts on both sides, were in sharp disagreement.

There were issues of credibility presented both as to experts and lay witnesses and the jury exercised its function in making a disposition upon the entire record.

The motion is denied.

* * * * * * * * *

DEFENDANT'S EXHIBIT A-69.

(See opposite page).

71 CV 986

A-69

D.D. 7-12-67 No. 9

Estimate for refurbishing

GENERAL GMC SALES, INC.

TRUCKS

1110 Main St. Telephone 775-2565

BRADLEY BEACH, N. J.

OWNER: Jersey Central Power & Light Co. | PHONE | DATE: 2/9/

Allenhurst, N.J. | CAR LOCATED AT: Farmingdale, N.J.

Truck # 5047

YEAR	MAKE	MODEL	LICENSE NO.	MILEAGE	MOTOR NO.	SERIAL NO.
	GMC	TH 7750A	ZP 4957	11037		D 3312 G

DESCRIPTION OF OPERATION	QTY	PART NO. OR CLASSIFICATION NO.			
Replace Cab	1		1923.00	250.00	[illegible]
Replace Frame	1		1820.00		125.
Replace Rear End Housing	1		525.00		200.
R & R All instruments.		F			180.
R & R Two Way Radio System.		10			150.
Install R.H. W/C Mirror.			20.00		10.
Install R.F. Sig. Light.			9.75		5.
Rebuild Two Front Springs.					120.
Replace rear cab support.			120.50		
Replace front drive prop. shaft.			153.20		30.
Replace right rear wheel shield.			49.75		30.
Replace right rear wheel rim		6	55.75		0.
Replace right rear wheel tire.18.22.5			265.00		
Service Engine, steam clean, ser. air		5.0			
cleaner, motor oil, anti-freeze.			48.95		00.
Replace upper strg. gear assy.			151.50		30
Align front end.					60.
R & R Lamp & Light Equipment on cab.		5.0			120.
Reline Right rear brakes, replace seals.			76.60		40.
Reline Right front brakes, repl. seals.			64.60		10.

INSURANCE CARRIER	TOTALS	5000.85	250.00
ADDRESS	PHONE	TOTAL PARTS	
INSURANCE COMPANY PAYS TO	INSURANCE COMPANY PAYS $	TOTAL LABOR	
		TOWING	
The above is an estimate based on our inspection and does not cover additional parts or labor which may be required after the work has been started. Occasionally other work becomes necessary when broken or damaged parts are discovered which are not evident on first inspection. Quotations on parts and labor are current at time of issue but subject to change	REQUIRED PAYS $	SUBLET	
ESTIMATE MADE 4-72			
	REPAIR ORDER NO.	TAX	
		TOTAL	

AUTHORIZATION FOR REPAIR

You are hereby authorized to make the above specified repairs to the car described hereon

BY (CUSTOMER SIGN HERE) (REPRESENTATIVE) DATE

Dell-S ID 5/11/73

ESTIMA

Continuation No. 1

GENERAL GMC SALES, INC.

TRUCKS

1110 Main St. Telephone 775-2565

BRADLEY BEACH, N. J.

OWNER | PHONE | DATE

CAR LOCATED AT

YEAR	MAKE	MODEL	LICENSE NO.	MILEAGE	MOTOR NO.	SERIAL NO.

DESCRIPTION OF OPERATION	QTY.	PART NO. OR OPERATION NO.	PARTS	PAINT	LABOR
Drain & refill Trans. forward & rear differentials. Gear Box.			64.00		30.00
Cab Control & link			26.20		
Cab Left & Right stop			33.00		
Cab L & R Frame Brkts.			59.60		
Cab Hinge Brkts.			59.20		
Cab Hinge Brkt. supports.			101.75		
Cab Torsion Bar			53.25		
Torsion Bar brkts.			62.20		
Cab release Brkt.			15.05		
Cab release brkt. support.			36.20		
Align Rear Springs.					40.00
Labor 310.00					
Paint 22.-					
Parts 566.60					
90.60					
Allowed 90.60					

INSURANCE CARRIER

ADJUSTER

INSURANCE CHECK PAYABLE TO

TOTALS 566.85 250.00 322.

PHONE

INSURANCE COMPANY PAYS $

INSURED PAYS $

REPAIR ORDER NO.

TOTAL PARTS	306.60
TOTAL PAINT	250.00
TOWING	
SUBLET	
TAX	
TOTAL	322.00

The above is an estimate based on our inspection, and does not cover additional parts or labor which may be required after the work has been opened up. Unnecessarily after work has started worn, broken or damaged parts are discovered which are not evident on first inspection. Quotations on parts and labor are current and subject to change.

ESTIMATE MADE

General GMC Sales, Inc. Tom Howell

AUTHORIZATION FOR REPAIR

You are hereby authorized to make the above specified repairs to the car described here o

BY _____ DATE _____

OWNER'S OR AGENT'S

ESTIMAT

UNITED STATES COURT OF APPEALS : FOR THE SECOND CIRCUIT

375—Affidavit of Service

The Reporter Co., Inc., 11 Park Place, New York, N. Y. 10007

DAVI D LANE AND MARY ANN LANE

Plaintiffs-Appellants

v.

GENERAL MOTORS CORPORATION, et al,

Defendants-Appellees

On Appeal from the United States District Court for the Southern District of New York

AFFIDAVIT OF SERVICE

STATE OF NEW YORK,
COUNTY OF New York , ss:

Harold Rudash being duly sworn,

deposes and says that he is over the age of 21 years and resides at 2530 Young Ave, Bronx, N

That on the 6th day of December , 19 74

he served the annexed Appendix Volumes I & II upon

Simpson, Thacher & Bartlett, Attorneys for the Defendant-Appellee, General Motors Corp.
One Battery Park Plaza, New York, N.Y. 100004

Berman & Frost, Attorneys for the Defendants-Appellees, A.B. Chance CO., and Pitman Manfacturing Co., a division thereof, 77 Water Street, New York, N.Y. 10005

in this action, by delivering to and leaving with said attorneys three true copies to each thereof.

DEPONENT FURTHER SAYS, that he knew the persons so served as aforesaid to be the persons mentioned and described in the said action.

Deponent is not a party to the action.

Sworn to before me, this 6th day of December, 19 74

Harold Rudash

Roland W. Johnson
ROLAND W. JOHNSON
Notary Public, State of New York
No. 4507905
Qualified in Delaware County
Commission Expires March 30, 1975